

the
Everything the
SHOW

PAUL HYNEK

**OUR IMMORTALITY
WITHIN REACH**

1
00:00:06,080 --> 00:00:14,010
do

2
00:00:20,790 --> 00:00:19,269
[Music]

3
00:00:23,349 --> 00:00:20,800
hello and welcome to the show i'm martin

4
00:00:25,670 --> 00:00:23,359
willis your host and this is the

5
00:00:27,509 --> 00:00:25,680
everything else show where i do a show

6
00:00:30,870 --> 00:00:27,519
about everything else that things that

7
00:00:33,190 --> 00:00:30,880
actually i have an interest in and the

8
00:00:36,229 --> 00:00:33,200
show is done with

9
00:00:39,030 --> 00:00:36,239
uh random topics at random time the

10
00:00:41,830 --> 00:00:39,040
easiest way to get a notification is to

11
00:00:43,910 --> 00:00:41,840
go here on our youtube site click

12
00:00:45,670 --> 00:00:43,920
subscribe then click the little

13
00:00:47,590 --> 00:00:45,680

notification bell

14

00:00:50,069 --> 00:00:47,600

i will be sending out

15

00:00:52,630 --> 00:00:50,079

you know actually newsletters about

16

00:00:55,430 --> 00:00:52,640

these shows if you want to go on my

17

00:00:57,189 --> 00:00:55,440

website which is podcastufo.com

18

00:00:58,709 --> 00:00:57,199

you'll see a little newsletter thing on

19

00:01:01,910 --> 00:00:58,719

the sidebar there

20

00:01:04,950 --> 00:01:01,920

so i was lucky enough to meet our guest

21

00:01:07,830 --> 00:01:04,960

a few years ago in phoenix paul heineck

22

00:01:09,670 --> 00:01:07,840

the son of the great j allen heineck

23

00:01:10,789 --> 00:01:09,680

project blue book fame

24

00:01:13,830 --> 00:01:10,799

and

25

00:01:17,270 --> 00:01:13,840

paul's personal lifespan

26
00:01:19,590 --> 00:01:17,280
has been increased recently by 10 years

27
00:01:20,870 --> 00:01:19,600
and that was after he participated in a

28
00:01:21,749 --> 00:01:20,880
groundbreaking

29
00:01:22,870 --> 00:01:21,759
trim

30
00:01:23,749 --> 00:01:22,880
trial

31
00:01:27,350 --> 00:01:23,759
and

32
00:01:29,990 --> 00:01:27,360
i also a subsequent program after that

33
00:01:33,670 --> 00:01:30,000
now the trim trial was first was the

34
00:01:34,630 --> 00:01:33,680
first ever approved by the fda

35
00:01:37,429 --> 00:01:34,640
and

36
00:01:40,469 --> 00:01:37,439
it wasn't to combat disease but rather

37
00:01:42,149 --> 00:01:40,479
to combat aging as a whole

38
00:01:43,990 --> 00:01:42,159

and this was the first time in history

39

00:01:48,469 --> 00:01:44,000

anyone has tested

40

00:01:50,630 --> 00:01:48,479

by steve horvath's epigenic clock test

41

00:01:52,950 --> 00:01:50,640

and actually tested younger

42

00:01:56,630 --> 00:01:52,960

than they previously previously had and

43

00:01:59,030 --> 00:01:56,640

this was published in september 2019 the

44

00:02:01,350 --> 00:01:59,040

aging cell magazine and

45

00:02:03,429 --> 00:02:01,360

um i believe our guest

46

00:02:04,230 --> 00:02:03,439

he just told me he was on a

47

00:02:05,990 --> 00:02:04,240

uh

48

00:02:08,469 --> 00:02:06,000

a tv show right

49

00:02:10,150 --> 00:02:08,479

with william shatner what was that when

50

00:02:11,190 --> 00:02:10,160

were you on that when was that episode

51
00:02:13,350 --> 00:02:11,200
high ball

52
00:02:17,110 --> 00:02:13,360
uh hi martin nice to be with you again

53
00:02:20,710 --> 00:02:17,120
yeah um yeah so our

54
00:02:23,750 --> 00:02:20,720
our trim procedure was featured in an

55
00:02:25,990 --> 00:02:23,760
episode of the unexplained with william

56
00:02:29,350 --> 00:02:26,000
shatner last december

57
00:02:30,869 --> 00:02:29,360
wow i bet you you got a lot of

58
00:02:32,949 --> 00:02:30,879
i mean that must have sparked a lot of

59
00:02:35,030 --> 00:02:32,959
interest someone did tell me about that

60
00:02:36,949 --> 00:02:35,040
and i said no it can't be the same but

61
00:02:39,350 --> 00:02:36,959
who there's not too many paul heineck's

62
00:02:42,710 --> 00:02:39,360
out there i don't think thankfully

63
00:02:46,550 --> 00:02:42,720

yeah yeah so paul up there's the cat

64

00:02:48,150 --> 00:02:46,560

already there we go there we go

65

00:02:50,949 --> 00:02:48,160

so much for a long life it just crossed

66

00:02:52,949 --> 00:02:50,959

your path right but it was 13th so i

67

00:02:55,750 --> 00:02:52,959

have that sort of anti you know

68

00:02:59,270 --> 00:02:55,760

superstition thing i see i see you had

69

00:03:01,990 --> 00:02:59,280

to so let's let's hear um

70

00:03:02,869 --> 00:03:02,000

this is great this is great uh so let's

71

00:03:03,670 --> 00:03:02,879

hear

72

00:03:05,670 --> 00:03:03,680

what

73

00:03:08,229 --> 00:03:05,680

how you decided to try this how you

74

00:03:10,309 --> 00:03:08,239

heard about the trial first of all and

75

00:03:11,190 --> 00:03:10,319

um you know i have to tell you there is

76

00:03:19,190 --> 00:03:11,200

a

77

00:03:21,430 --> 00:03:19,200

i'm trying to remember the

78

00:03:23,589 --> 00:03:21,440

i i want to say his name was like

79

00:03:25,350 --> 00:03:23,599

seeing an indian

80

00:03:28,630 --> 00:03:25,360

uh from india

81

00:03:31,030 --> 00:03:28,640

over 100 years old running the marathon

82

00:03:33,030 --> 00:03:31,040

and what was really interesting about

83

00:03:36,470 --> 00:03:33,040

that when they were asking

84

00:03:38,470 --> 00:03:36,480

him you know what he does to keep going

85

00:03:41,270 --> 00:03:38,480

and live as long as he has i believe he

86

00:03:43,750 --> 00:03:41,280

was born in 1911 he's still alive

87

00:03:46,869 --> 00:03:43,760

and that was calorie restriction and

88

00:03:49,110 --> 00:03:46,879

this is this is all part of of

89

00:03:51,830 --> 00:03:49,120

your regimen and what you're doing and

90

00:03:52,949 --> 00:03:51,840

and also if i can just a little bit more

91

00:03:54,710 --> 00:03:52,959

about that

92

00:03:55,589 --> 00:03:54,720

which i think is very interesting they

93

00:03:58,869 --> 00:03:55,599

have

94

00:04:01,350 --> 00:03:58,879

when they calorie restrict mice in a lab

95

00:04:03,750 --> 00:04:01,360

they lived they live about 30 percent

96

00:04:07,350 --> 00:04:03,760

longer but

97

00:04:08,949 --> 00:04:07,360

they're miserable basically for life

98

00:04:11,589 --> 00:04:08,959

but when they do

99

00:04:13,509 --> 00:04:11,599

when they're intermittent

100

00:04:14,949 --> 00:04:13,519

then they calorie restrict

101

00:04:17,189 --> 00:04:14,959

intermittently

102

00:04:19,909 --> 00:04:17,199

yeah mice have a better life and they

103

00:04:22,310 --> 00:04:19,919

still live 30 percent longer so there

104

00:04:24,790 --> 00:04:22,320

yeah is something to that

105

00:04:27,430 --> 00:04:24,800

right and you know from my knowledge

106

00:04:28,550 --> 00:04:27,440

there's not a lot of

107

00:04:30,390 --> 00:04:28,560

research

108

00:04:32,950 --> 00:04:30,400

that calorie restriction works for

109

00:04:36,390 --> 00:04:32,960

mammals really good evidence for mice

110

00:04:38,710 --> 00:04:36,400

but i think there's more evidence that

111

00:04:40,310 --> 00:04:38,720

the de facto

112

00:04:42,310 --> 00:04:40,320

calorie restriction

113

00:04:44,390 --> 00:04:42,320

created by intermittent fasting if

114

00:04:46,710 --> 00:04:44,400

you're not gorging in the hours that you

115

00:04:47,670 --> 00:04:46,720

do eat to make up for it is actually

116

00:04:51,350 --> 00:04:47,680

more

117

00:04:53,350 --> 00:04:51,360

mammals so i'm not sure if the calorie

118

00:04:55,270 --> 00:04:53,360

restriction goes up to the larger

119

00:04:57,510 --> 00:04:55,280

creatures or not

120

00:04:59,350 --> 00:04:57,520

i oh really

121

00:05:00,230 --> 00:04:59,360

yeah it seems like it's more a question

122

00:05:03,430 --> 00:05:00,240

of

123

00:05:06,230 --> 00:05:03,440

when you eat as to how much um and as

124

00:05:08,230 --> 00:05:06,240

you may know with with the trim trial

125

00:05:11,510 --> 00:05:08,240

calorie restriction is really not part

126
00:05:13,749 --> 00:05:11,520
of that um so we're encouraged to keep

127
00:05:16,070 --> 00:05:13,759
our lifestyle the same and not make

128
00:05:18,310 --> 00:05:16,080
sweeping changes to diet but i've been

129
00:05:19,430 --> 00:05:18,320
an intermittent faster for some years

130
00:05:22,230 --> 00:05:19,440
now

131
00:05:24,310 --> 00:05:22,240
yeah i've done that a lot of people have

132
00:05:28,230 --> 00:05:24,320
noticed that i've dropped a lot of

133
00:05:30,469 --> 00:05:28,240
weight and um i have i've over 40 pounds

134
00:05:33,430 --> 00:05:30,479
in about a year and i i've been doing

135
00:05:35,830 --> 00:05:33,440
the 20 thank you the 23 hour

136
00:05:37,430 --> 00:05:35,840
fast and i took two weeks to get used to

137
00:05:39,990 --> 00:05:37,440
it and then i don't i don't always stick

138
00:05:42,550 --> 00:05:40,000

to it but that's really what i've done

139

00:05:43,670 --> 00:05:42,560

and i feel more cognitive i feel better

140

00:05:47,110 --> 00:05:43,680

overall

141

00:05:49,110 --> 00:05:47,120

um and it feels great to actually

142

00:05:51,270 --> 00:05:49,120

shed that but also

143

00:05:53,350 --> 00:05:51,280

um you know i feel like

144

00:05:55,110 --> 00:05:53,360

i feel like i look younger when i look

145

00:05:56,469 --> 00:05:55,120

in the mirror i don't know if that's has

146

00:05:59,110 --> 00:05:56,479

anything to do with it maybe it's my

147

00:06:01,110 --> 00:05:59,120

imagination but still

148

00:06:03,029 --> 00:06:01,120

but i think it's it's a you said that

149

00:06:05,189 --> 00:06:03,039

you've been doing that but i also heard

150

00:06:07,670 --> 00:06:05,199

that stressing

151

00:06:09,510 --> 00:06:07,680

um yourself in other words a little hot

152

00:06:12,070 --> 00:06:09,520

sometimes a little cold

153

00:06:14,469 --> 00:06:12,080

you keep you keep yourself uh active and

154

00:06:16,550 --> 00:06:14,479

these things will help you as well what

155

00:06:19,350 --> 00:06:16,560

do you know about any of that stuff

156

00:06:22,230 --> 00:06:19,360

yeah so i i'm a follower of rhonda

157

00:06:24,710 --> 00:06:22,240

patrick who is a brilliant woman who's

158

00:06:27,350 --> 00:06:24,720

got a lot of videos online who talks

159

00:06:29,350 --> 00:06:27,360

about the benefits of saunas and other

160

00:06:31,270 --> 00:06:29,360

things that can generate the heat shock

161

00:06:34,390 --> 00:06:31,280

protein

162

00:06:36,390 --> 00:06:34,400

as well as vim hoff who's the ice man on

163

00:06:40,070 --> 00:06:36,400

the other end of the spectrum so

164

00:06:43,029 --> 00:06:40,080

i have a super janky home

165

00:06:46,469 --> 00:06:43,039

chinese sauna and i'll do that and then

166

00:06:48,629 --> 00:06:46,479

go in the cold shower um and

167

00:06:51,909 --> 00:06:48,639

i i it's you know with so many of these

168

00:06:54,629 --> 00:06:51,919

health things it's hard to attribute

169

00:06:56,550 --> 00:06:54,639

immediate causation to what you're doing

170

00:06:58,550 --> 00:06:56,560

but the sauna you know intermittent

171

00:06:59,670 --> 00:06:58,560

fasting just sort of seems to resonate

172

00:07:02,550 --> 00:06:59,680

with me

173

00:07:04,309 --> 00:07:02,560

and uh the sauna and the cold shower

174

00:07:06,070 --> 00:07:04,319

they just

175

00:07:08,950 --> 00:07:06,080

not only well the sauna feels good the

176

00:07:11,029 --> 00:07:08,960

cold shower doesn't always feel good but

177

00:07:12,309 --> 00:07:11,039

it really is bracing and you know

178

00:07:14,309 --> 00:07:12,319

there's nobody in the history of the

179

00:07:16,629 --> 00:07:14,319

world that's fallen asleep in a cold

180

00:07:19,110 --> 00:07:16,639

shower i mean it really gives you energy

181

00:07:21,270 --> 00:07:19,120

and there's pretty good evidence that

182

00:07:22,550 --> 00:07:21,280

both the creation of the heat shock

183

00:07:24,550 --> 00:07:22,560

proteins

184

00:07:26,390 --> 00:07:24,560

and that cold

185

00:07:28,710 --> 00:07:26,400

like you said putting that kind of

186

00:07:31,589 --> 00:07:28,720

stress on the immune system

187

00:07:32,710 --> 00:07:31,599

in a way similar to fasting tend to

188

00:07:34,629 --> 00:07:32,720

reboot the

189

00:07:37,350 --> 00:07:34,639

immune system

190

00:07:39,029 --> 00:07:37,360

right now as far as you know some of the

191

00:07:41,589 --> 00:07:39,039

things i've looked at

192

00:07:44,950 --> 00:07:41,599

um over the years when i've just been

193

00:07:47,189 --> 00:07:44,960

fascinated by this topic is uh telomeres

194

00:07:49,430 --> 00:07:47,199

and how they become you know they copy

195

00:07:50,790 --> 00:07:49,440

it themselves and they become shorter

196

00:07:52,790 --> 00:07:50,800

and shorter

197

00:07:55,189 --> 00:07:52,800

and that's one of the things

198

00:07:57,749 --> 00:07:55,199

that um you know

199

00:07:59,670 --> 00:07:57,759

is recognized as aging and i know

200

00:08:02,550 --> 00:07:59,680

there's something out there like telum

201
00:08:04,070 --> 00:08:02,560
eraser something that can slow down

202
00:08:05,510 --> 00:08:04,080
this um

203
00:08:07,990 --> 00:08:05,520
and do you know anything about that i

204
00:08:10,309 --> 00:08:08,000
know you're mostly in this trim

205
00:08:12,469 --> 00:08:10,319
uh trial situation but other have you

206
00:08:14,950 --> 00:08:12,479
looked at all facets

207
00:08:15,990 --> 00:08:14,960
yeah i'm interested in all aspects

208
00:08:18,469 --> 00:08:16,000
you know

209
00:08:20,070 --> 00:08:18,479
um my good friend aubrey de gray who's

210
00:08:22,390 --> 00:08:20,080
really well known in life extension

211
00:08:24,950 --> 00:08:22,400
circles and bill andrews who's also

212
00:08:27,029 --> 00:08:24,960
known have differing views on whether

213
00:08:29,189 --> 00:08:27,039

you want to encourage or inhibit

214

00:08:31,270 --> 00:08:29,199

telomerase and you know for those

215

00:08:34,230 --> 00:08:31,280

listening who aren't intimately familiar

216

00:08:36,550 --> 00:08:34,240

with telomeres it's basically the

217

00:08:37,509 --> 00:08:36,560

the number of times cells can divide in

218

00:08:40,709 --> 00:08:37,519

your body

219

00:08:43,190 --> 00:08:40,719

and that's kind of a hard stop in some

220

00:08:45,910 --> 00:08:43,200

animals some aquatic animals it's they

221

00:08:48,310 --> 00:08:45,920

just keep going and they don't stop so

222

00:08:49,430 --> 00:08:48,320

one of the keys to radical life

223

00:08:51,590 --> 00:08:49,440

extension

224

00:08:53,670 --> 00:08:51,600

is understanding how to increase the

225

00:08:56,310 --> 00:08:53,680

number of telomeres i don't think

226

00:09:00,070 --> 00:08:56,320

there's any clear-cut consensus

227

00:09:02,470 --> 00:09:00,080

really on telomerase which is the active

228

00:09:04,630 --> 00:09:02,480

component and what whether you need to

229

00:09:05,990 --> 00:09:04,640

inhibit or increase it now we may get a

230

00:09:07,509 --> 00:09:06,000

whole bunch of comments that of course

231

00:09:09,829 --> 00:09:07,519

that's been settled paul what are you

232

00:09:10,710 --> 00:09:09,839

talking about i don't know but i've not

233

00:09:13,190 --> 00:09:10,720

seen

234

00:09:14,710 --> 00:09:13,200

anything related to telomeres

235

00:09:17,269 --> 00:09:14,720

nearly as

236

00:09:20,470 --> 00:09:17,279

clear-cut as what we're doing with the

237

00:09:23,269 --> 00:09:20,480

thymus which is arguably the first and

238

00:09:25,590 --> 00:09:23,279

most important component of a

239

00:09:27,910 --> 00:09:25,600

overall life extension program

240

00:09:28,630 --> 00:09:27,920

all right well let's go into what

241

00:09:33,829 --> 00:09:28,640

the

242

00:09:37,030 --> 00:09:33,839

thymus is and this is uh

243

00:09:39,269 --> 00:09:37,040

i've put up some graph graphics because

244

00:09:41,910 --> 00:09:39,279

i realize that as you age be when you

245

00:09:42,870 --> 00:09:41,920

get between the ages of 60 and 80 it

246

00:09:48,470 --> 00:09:42,880

kind of

247

00:09:51,030 --> 00:09:48,480

one of the reasons that we die

248

00:09:52,790 --> 00:09:51,040

yeah and your thymus as you as you soda

249

00:09:54,870 --> 00:09:52,800

i don't know how you got my actual

250

00:09:57,269 --> 00:09:54,880

thymus there from my doctor but it's

251
00:09:59,990 --> 00:09:57,279
located behind your breast plate right

252
00:10:03,030 --> 00:10:00,000
yeah and it's what creates the t cells

253
00:10:05,190 --> 00:10:03,040
which are thymus enabled cells which are

254
00:10:08,069 --> 00:10:05,200
your white blood cells which is your

255
00:10:10,069 --> 00:10:08,079
immune system in action and your thymus

256
00:10:12,470 --> 00:10:10,079
it we it says involution there which

257
00:10:15,269 --> 00:10:12,480
means shrinking your thymus actually

258
00:10:20,069 --> 00:10:15,279
starts involuting to the tune of three

259
00:10:21,110 --> 00:10:20,079
percent per year as early as age 20.

260
00:10:22,870 --> 00:10:21,120
so

261
00:10:24,230 --> 00:10:22,880
because evolutionary

262
00:10:26,150 --> 00:10:24,240
wise you know at that point you're

263
00:10:28,069 --> 00:10:26,160

already you've already had children and

264

00:10:29,990 --> 00:10:28,079

all that and you should get on the outer

265

00:10:32,630 --> 00:10:30,000

reaches of the bonfire and you know

266

00:10:34,310 --> 00:10:32,640

leave the rest for the youngins so

267

00:10:35,190 --> 00:10:34,320

the purpose of

268

00:10:37,670 --> 00:10:35,200

this

269

00:10:41,030 --> 00:10:37,680

original trim trial

270

00:10:42,470 --> 00:10:41,040

as conceived by greg fay

271

00:10:45,509 --> 00:10:42,480

is to actually

272

00:10:49,190 --> 00:10:45,519

regrow the thymus gland

273

00:10:52,389 --> 00:10:49,200

and make it functional once again

274

00:10:53,750 --> 00:10:52,399

and and that is possible you're saying

275

00:10:55,509 --> 00:10:53,760

yes and so

276

00:10:58,069 --> 00:10:55,519

i learned about this i was already

277

00:10:58,870 --> 00:10:58,079

attuned to life extension i just always

278

00:11:01,509 --> 00:10:58,880

felt

279

00:11:03,590 --> 00:11:01,519

since i was a kid

280

00:11:06,550 --> 00:11:03,600

that things like computers becoming

281

00:11:08,790 --> 00:11:06,560

aware the singularity and radical life

282

00:11:11,190 --> 00:11:08,800

extension would be possible

283

00:11:13,269 --> 00:11:11,200

uh in the not too distant future

284

00:11:15,829 --> 00:11:13,279

call it

285

00:11:17,430 --> 00:11:15,839

naive optimism perhaps but i just seemed

286

00:11:19,829 --> 00:11:17,440

like that just felt like it could be

287

00:11:22,389 --> 00:11:19,839

possible so i was already predisposed to

288

00:11:23,910 --> 00:11:22,399

this then i came across aubry de gray

289

00:11:25,430 --> 00:11:23,920

and got very involved with him and his

290

00:11:28,310 --> 00:11:25,440

work where

291

00:11:30,710 --> 00:11:28,320

he looks at it in a very interesting way

292

00:11:33,110 --> 00:11:30,720

that if you try to change basic

293

00:11:34,470 --> 00:11:33,120

metabolic processes that's very

294

00:11:37,509 --> 00:11:34,480

difficult to do

295

00:11:39,430 --> 00:11:37,519

on the other hand if you wait until all

296

00:11:41,350 --> 00:11:39,440

these things happen your body

297

00:11:43,509 --> 00:11:41,360

now you're just doing palliative care

298

00:11:45,750 --> 00:11:43,519

you're giving advil you're doing things

299

00:11:48,630 --> 00:11:45,760

to reduce pain but you're not really

300

00:11:51,750 --> 00:11:48,640

functionally increasing lifespan so if

301

00:11:53,509 --> 00:11:51,760

you liken the body to a car let's say

302

00:11:55,910 --> 00:11:53,519

now if you buy a car

303

00:11:57,829 --> 00:11:55,920

you can maintain it for virtually

304

00:12:00,230 --> 00:11:57,839

forever just replacing all the parts if

305

00:12:02,470 --> 00:12:00,240

you take good care of it so what aubry

306

00:12:05,350 --> 00:12:02,480

did was break down

307

00:12:08,310 --> 00:12:05,360

the basic areas of aging into seven

308

00:12:09,269 --> 00:12:08,320

areas and two of them are

309

00:12:12,550 --> 00:12:09,279

junk

310

00:12:14,870 --> 00:12:12,560

uh accruing or collecting in your cells

311

00:12:18,389 --> 00:12:14,880

and also outside the cells in the

312

00:12:19,509 --> 00:12:18,399

extracellular matrix so his idea is that

313

00:12:22,150 --> 00:12:19,519

well look

314

00:12:23,750 --> 00:12:22,160

stopping that junk from originating is

315

00:12:25,590 --> 00:12:23,760

too difficult

316

00:12:26,710 --> 00:12:25,600

waiting until it's reached a critical

317

00:12:29,590 --> 00:12:26,720

mass

318

00:12:31,110 --> 00:12:29,600

and causes pathology is too late what if

319

00:12:33,829 --> 00:12:31,120

we can essentially go in there

320

00:12:35,190 --> 00:12:33,839

periodically and scoop it out before it

321

00:12:37,750 --> 00:12:35,200

causes damage

322

00:12:40,150 --> 00:12:37,760

that should be have a lot of bang for

323

00:12:44,310 --> 00:12:40,160

the buck can be a lot easier so i really

324

00:12:48,949 --> 00:12:48,069

it's now called sends.org s-e-n-s dot

325

00:12:50,949 --> 00:12:48,959

org

326

00:12:53,190 --> 00:12:50,959

and then so then i was already kind of

327

00:12:54,550 --> 00:12:53,200

primed and when i was speaking at a

328

00:12:59,350 --> 00:12:54,560

conference

329

00:13:02,230 --> 00:12:59,360

about five years ago greg fay was

330

00:13:05,190 --> 00:13:02,240

another speaker and he was announcing

331

00:13:07,910 --> 00:13:05,200

this trial to regrow the thymus

332

00:13:10,310 --> 00:13:07,920

and he said you know he had a very greg

333

00:13:13,350 --> 00:13:10,320

is a brilliant guy and also very soft

334

00:13:15,829 --> 00:13:13,360

spoken but he had a very strong research

335

00:13:18,710 --> 00:13:15,839

foundation of other efforts that have

336

00:13:21,670 --> 00:13:18,720

come close to what he wanted to do

337

00:13:24,069 --> 00:13:21,680

in mice and in humans and as you

338

00:13:26,710 --> 00:13:24,079

mentioned in the opener it's the first

339

00:13:29,190 --> 00:13:26,720

trial ever approved by the fda to combat

340

00:13:31,750 --> 00:13:29,200

aging as a whole and not this or that

341

00:13:33,670 --> 00:13:31,760

disease and also approved by the irb the

342

00:13:35,750 --> 00:13:33,680

institutional review board

343

00:13:38,790 --> 00:13:35,760

and it was run under the aegis of the

344

00:13:40,870 --> 00:13:38,800

stanford neuroscience institute so he

345

00:13:42,790 --> 00:13:40,880

announced the sort of parameters the age

346

00:13:44,870 --> 00:13:42,800

range and that you had to be in very

347

00:13:46,629 --> 00:13:44,880

good health and that you'd be tested and

348

00:13:48,949 --> 00:13:46,639

then you could join it for free

349

00:13:51,030 --> 00:13:48,959

and i thought this is just amazing and i

350

00:13:53,430 --> 00:13:51,040

i went up to stage after greg's

351
00:13:55,750 --> 00:13:53,440
presentation and said dr fay i was blown

352
00:13:58,230 --> 00:13:55,760
away by your presentation and do all the

353
00:14:04,150 --> 00:13:58,240
testing you want on me but i guarantee

354
00:14:09,829 --> 00:14:06,710
how about that wow so

355
00:14:10,790 --> 00:14:09,839
can you explain exactly what the thymus

356
00:14:13,030 --> 00:14:10,800
does

357
00:14:16,550 --> 00:14:13,040
and why it's so critical that we have to

358
00:14:19,189 --> 00:14:16,560
has to be rejuvenated for longevity yeah

359
00:14:21,590 --> 00:14:19,199
it's basically the think of like the the

360
00:14:23,750 --> 00:14:21,600
heart is the engine of your of your

361
00:14:25,509 --> 00:14:23,760
blood and your circulatory system

362
00:14:26,870 --> 00:14:25,519
the thymus is the equivalent for your

363
00:14:28,870 --> 00:14:26,880

immune system

364

00:14:31,350 --> 00:14:28,880

it it actually i know i'm kind of

365

00:14:33,430 --> 00:14:31,360

glossing over a lot of details here i'm

366

00:14:35,030 --> 00:14:33,440

a french major so bear with me

367

00:14:37,509 --> 00:14:35,040

but the thymus

368

00:14:38,389 --> 00:14:37,519

basically grabs regular cells from the

369

00:14:42,550 --> 00:14:38,399

body

370

00:14:44,550 --> 00:14:42,560

and i say zombifies them into t cells

371

00:14:47,189 --> 00:14:44,560

and these are the cells that will attack

372

00:14:49,829 --> 00:14:47,199

pathogens in your body and it creates at

373

00:14:50,790 --> 00:14:49,839

least two kinds of t cells let's say

374

00:14:54,230 --> 00:14:50,800

normal

375

00:14:57,430 --> 00:14:54,240

and naive t cells which are especially

376

00:14:59,030 --> 00:14:57,440

effective at fighting unknown pathogens

377

00:15:01,670 --> 00:14:59,040

you know diseases that you've not

378

00:15:03,350 --> 00:15:01,680

already encountered and as you get older

379

00:15:06,069 --> 00:15:03,360

and as you mentioned the thymus turns

380

00:15:07,430 --> 00:15:06,079

more both shrinks and turns more to

381

00:15:10,230 --> 00:15:07,440

fatty tissue

382

00:15:13,350 --> 00:15:10,240

and produces both less t cells but

383

00:15:15,910 --> 00:15:13,360

especially less naive t cells so as you

384

00:15:20,310 --> 00:15:15,920

get older in your 50s and 60s and 70s

385

00:15:23,030 --> 00:15:20,320

your body is really less able to handle

386

00:15:24,230 --> 00:15:23,040

especially larger threats like cancer

387

00:15:25,269 --> 00:15:24,240

for example

388

00:15:27,189 --> 00:15:25,279

so

389

00:15:29,189 --> 00:15:27,199

the thymus really is your immune system

390

00:15:31,590 --> 00:15:29,199

and there's been a lot of research both

391

00:15:33,430 --> 00:15:31,600

done by humans and ai

392

00:15:35,509 --> 00:15:33,440

that have sort of come to the conclusion

393

00:15:38,310 --> 00:15:35,519

that all the things you need to do

394

00:15:40,790 --> 00:15:38,320

telomeres like you mentioned stem cells

395

00:15:42,870 --> 00:15:40,800

uh immune system that the immune system

396

00:15:45,350 --> 00:15:42,880

is really job number one because you can

397

00:15:47,509 --> 00:15:45,360

have as many telomeres as you want if

398

00:15:50,150 --> 00:15:47,519

you don't have an immune system that can

399

00:15:52,790 --> 00:15:50,160

fend off the flu you're going to die so

400

00:15:53,590 --> 00:15:52,800

the immune system is really the first

401
00:15:56,150 --> 00:15:53,600
and

402
00:15:57,670 --> 00:15:56,160
now perhaps not most difficult because

403
00:16:00,230 --> 00:15:57,680
we've had some really good success with

404
00:16:03,030 --> 00:16:00,240
it step along the journey

405
00:16:04,710 --> 00:16:03,040
to functional immortality

406
00:16:07,269 --> 00:16:04,720
wow if

407
00:16:08,710 --> 00:16:07,279
oh look who's in we have someone joining

408
00:16:11,350 --> 00:16:08,720
us

409
00:16:14,949 --> 00:16:11,360
how about that greg welcome to hi

410
00:16:17,509 --> 00:16:14,959
hello look this is uh dr greg fahey

411
00:16:20,310 --> 00:16:17,519
thank you very much for uh joining us so

412
00:16:22,389 --> 00:16:20,320
a pleasure yeah we we didn't know if you

413
00:16:24,470 --> 00:16:22,399

get the message or not but here you are

414

00:16:27,829 --> 00:16:24,480

i appreciate it so we're we're moving

415

00:16:29,350 --> 00:16:27,839

along here uh paul has been describing i

416

00:16:32,230 --> 00:16:29,360

know you're you're on us phone but

417

00:16:33,509 --> 00:16:32,240

you're you're getting stabilized there

418

00:16:35,350 --> 00:16:33,519

yeah

419

00:16:37,350 --> 00:16:35,360

oh we lost your audio

420

00:16:39,509 --> 00:16:37,360

put you on speaker if possible so i can

421

00:16:40,949 --> 00:16:39,519

hear you better yeah but if not we can

422

00:16:42,389 --> 00:16:40,959

manage this way

423

00:16:43,269 --> 00:16:42,399

yeah why don't we do it this way we have

424

00:16:48,310 --> 00:16:43,279

you

425

00:16:50,870 --> 00:16:48,320

joining us i know it was the last

426

00:16:53,670 --> 00:16:50,880

actually it was after the show started

427

00:16:54,870 --> 00:16:53,680

that you got the notification but so you

428

00:16:59,189 --> 00:16:54,880

were

429

00:17:01,829 --> 00:16:59,199

study and pushing it and all that and

430

00:17:03,509 --> 00:17:01,839

paul just told the story about you being

431

00:17:05,909 --> 00:17:03,519

up on the stage and him coming up and

432

00:17:07,510 --> 00:17:05,919

saying okay i'm in the study that's one

433

00:17:09,429 --> 00:17:07,520

thing i know for sure

434

00:17:10,630 --> 00:17:09,439

but yeah that was great it was a great

435

00:17:13,429 --> 00:17:10,640

experience

436

00:17:15,510 --> 00:17:13,439

yeah so are you excited about the way

437

00:17:17,669 --> 00:17:15,520

things are looking

438

00:17:20,309 --> 00:17:17,679

yeah i mean i'm i'm never satisfied

439

00:17:22,309 --> 00:17:20,319

about anything but yes i am excited

440

00:17:24,549 --> 00:17:22,319

we're reproducing a lot of the results

441

00:17:26,230 --> 00:17:24,559

that we saw in the original trial

442

00:17:28,870 --> 00:17:26,240

we're trying to go beyond the original

443

00:17:31,110 --> 00:17:28,880

trial add some extra bells and whistles

444

00:17:33,110 --> 00:17:31,120

and uh not even paul knows this but

445

00:17:34,390 --> 00:17:33,120

we're looking at some new diagnostics

446

00:17:35,990 --> 00:17:34,400

coming up

447

00:17:39,909 --> 00:17:36,000

that may allow us to actually look

448

00:17:41,110 --> 00:17:39,919

inside your body and see how old you are

449

00:17:42,950 --> 00:17:41,120

uh

450

00:17:44,549 --> 00:17:42,960

nobody else has thought of this before

451
00:17:46,310 --> 00:17:44,559
so we're

452
00:17:47,750 --> 00:17:46,320
we're really uh hoping that we can

453
00:17:48,789 --> 00:17:47,760
launch this pretty soon but we'll be the

454
00:17:52,310 --> 00:17:48,799
first

455
00:17:55,270 --> 00:17:52,320
wow now i heard dr sinclair on from

456
00:17:57,990 --> 00:17:55,280
harvard on an interview and he said that

457
00:18:00,789 --> 00:17:58,000
he could do a blood test until

458
00:18:03,590 --> 00:18:00,799
um through some type of algorithms about

459
00:18:04,950 --> 00:18:03,600
when you're going to die and i that's

460
00:18:07,590 --> 00:18:04,960
something i really

461
00:18:09,909 --> 00:18:07,600
don't want to know

462
00:18:11,990 --> 00:18:09,919
unless there was a way around it but is

463
00:18:14,710 --> 00:18:12,000

uh does that make sense or is that is

464

00:18:16,070 --> 00:18:14,720

that something that makes sense to you

465

00:18:18,150 --> 00:18:16,080

well yeah so

466

00:18:20,230 --> 00:18:18,160

one of the main measures that we used in

467

00:18:22,470 --> 00:18:20,240

our study which we

468

00:18:24,789 --> 00:18:22,480

tried on paul and paul did well on this

469

00:18:26,870 --> 00:18:24,799

essay is the grim age clock

470

00:18:29,270 --> 00:18:26,880

so the grim age is called gremades

471

00:18:31,110 --> 00:18:29,280

because it's named after the grim reaper

472

00:18:32,789 --> 00:18:31,120

and the reason for that is it was

473

00:18:34,230 --> 00:18:32,799

designed to try to predict how long

474

00:18:36,390 --> 00:18:34,240

you're going to live

475

00:18:38,630 --> 00:18:36,400

and it's not a one-to-one relationship

476

00:18:40,310 --> 00:18:38,640

if your grim age goes down by year

477

00:18:42,630 --> 00:18:40,320

doesn't mean that you're going to live

478

00:18:44,950 --> 00:18:42,640

one year longer precisely but your

479

00:18:47,990 --> 00:18:44,960

mortality rate will go down so your

480

00:18:50,310 --> 00:18:48,000

chances of living longer increase

481

00:18:52,310 --> 00:18:50,320

so if you really work at that sort of a

482

00:18:53,669 --> 00:18:52,320

clock yeah you'd be better and better

483

00:18:54,789 --> 00:18:53,679

able to predict how long you're going to

484

00:18:57,029 --> 00:18:54,799

live

485

00:18:59,029 --> 00:18:57,039

and i think one thing about that is that

486

00:19:01,510 --> 00:18:59,039

we tend to die

487

00:19:03,190 --> 00:19:01,520

not of anything uh

488

00:19:06,390 --> 00:19:03,200

general we tend to die of things that

489

00:19:08,950 --> 00:19:06,400

are very specific like a heart attack or

490

00:19:09,830 --> 00:19:08,960

uh that sort of thing cancer

491

00:19:11,909 --> 00:19:09,840

and

492

00:19:13,430 --> 00:19:11,919

those may be easier to predict than

493

00:19:17,029 --> 00:19:13,440

aging per se

494

00:19:19,350 --> 00:19:17,039

so if uh if you took into account heart

495

00:19:21,590 --> 00:19:19,360

disease and cancer you'd account for

496

00:19:23,750 --> 00:19:21,600

about 70 percent of the all of the

497

00:19:25,909 --> 00:19:23,760

deaths the other 30 are due to

498

00:19:27,510 --> 00:19:25,919

immunosenescence in my opinion as a

499

00:19:29,029 --> 00:19:27,520

matter of fact a lot of heart disease is

500

00:19:30,630 --> 00:19:29,039

probably due to immunosine essence but

501
00:19:32,470 --> 00:19:30,640
we'll get into that later

502
00:19:33,909 --> 00:19:32,480
uh so yeah you could probably come up

503
00:19:35,669 --> 00:19:33,919
with a clock that would predict more or

504
00:19:38,390 --> 00:19:35,679
less how long you're gonna live

505
00:19:41,110 --> 00:19:38,400
so i think what dr sinclair said is

506
00:19:43,350 --> 00:19:41,120
scientifically possible i may not

507
00:19:45,350 --> 00:19:43,360
exactly know which clock is referring to

508
00:19:47,190 --> 00:19:45,360
but it is possible he could have just

509
00:19:49,510 --> 00:19:47,200
been referring to the grim age clock

510
00:19:52,310 --> 00:19:49,520
which is the same one that we used

511
00:19:54,470 --> 00:19:52,320
and martin uh greg is too modest to say

512
00:19:56,870 --> 00:19:54,480
but he knows david sinclair quite well

513
00:19:59,990 --> 00:19:56,880

and spent time with him and uh david

514

00:20:02,470 --> 00:20:00,000

sinclair has talked about our trim trial

515

00:20:05,270 --> 00:20:02,480

in very glowing terms on air

516

00:20:06,630 --> 00:20:05,280

oh oh wow wow great well several times

517

00:20:08,549 --> 00:20:06,640

actually

518

00:20:11,909 --> 00:20:08,559

one of the things i want to do before we

519

00:20:13,750 --> 00:20:11,919

move too far into this is i'm sure it's

520

00:20:15,750 --> 00:20:13,760

the average person listening watching or

521

00:20:18,070 --> 00:20:15,760

whatever they're thinking to themselves

522

00:20:21,190 --> 00:20:18,080

well this is all great but what can i do

523

00:20:23,029 --> 00:20:21,200

what can i do to to to live longer is

524

00:20:26,230 --> 00:20:23,039

there any i don't know which one of you

525

00:20:27,830 --> 00:20:26,240

wants to tackle that um but

526

00:20:29,350 --> 00:20:27,840

i'm sure that's a question that comes to

527

00:20:32,549 --> 00:20:29,360

most people's minds i just need to have

528

00:20:38,390 --> 00:20:32,559

a little drink here first

529

00:20:42,230 --> 00:20:39,830

you got to bring that into the camera a

530

00:20:45,190 --> 00:20:42,240

little bit better oh yeah right

531

00:20:46,230 --> 00:20:45,200

okay and uh can can you get that on ebay

532

00:20:50,789 --> 00:20:46,240

or something

533

00:20:55,110 --> 00:20:52,149

that doesn't surprise me that you went

534

00:20:57,510 --> 00:20:55,120

through all that trouble to do that paul

535

00:20:59,350 --> 00:20:57,520

anything for you martin yeah yeah so

536

00:21:00,710 --> 00:20:59,360

anyway yeah what can the average person

537

00:21:01,830 --> 00:21:00,720

do

538

00:21:03,590 --> 00:21:01,840

well there's a lot of things that you

539

00:21:04,549 --> 00:21:03,600

can do all of the obvious things of

540

00:21:07,909 --> 00:21:04,559

course

541

00:21:08,950 --> 00:21:07,919

uh try to exercise regularly don't smoke

542

00:21:11,990 --> 00:21:08,960

uh

543

00:21:14,070 --> 00:21:12,000

don't overeat don't drink too much

544

00:21:15,669 --> 00:21:14,080

don't you know so all of the the normal

545

00:21:17,029 --> 00:21:15,679

things but then beyond that there's some

546

00:21:19,029 --> 00:21:17,039

really interesting

547

00:21:20,549 --> 00:21:19,039

possible interventions that are

548

00:21:23,909 --> 00:21:20,559

accessible right now

549

00:21:25,430 --> 00:21:23,919

one of them is to boost your nad level

550

00:21:27,190 --> 00:21:25,440

so there are

551
00:21:32,310 --> 00:21:27,200
molecules you can take that can be

552
00:21:34,710 --> 00:21:32,320
converted into nad in the body and uh

553
00:21:37,430 --> 00:21:34,720
we're not quite sure how effective they

554
00:21:39,270 --> 00:21:37,440
are at raising your tissue stores of nad

555
00:21:42,070 --> 00:21:39,280
but uh they're gonna be better than

556
00:21:44,390 --> 00:21:42,080
nothing uh there's also a product that

557
00:21:47,590 --> 00:21:44,400
some people have claimed uh is

558
00:21:51,270 --> 00:21:47,600
particularly good at that based on

559
00:21:54,149 --> 00:21:51,280
raising nad levels in blood cells um

560
00:21:58,789 --> 00:21:56,470
there are things also on the

561
00:22:01,190 --> 00:21:58,799
drawing board that are

562
00:22:03,350 --> 00:22:01,200
more difficult to do but still

563
00:22:05,110 --> 00:22:03,360

potentially possible if you get into a

564

00:22:07,270 --> 00:22:05,120

clinical trial

565

00:22:09,270 --> 00:22:07,280

of course one of the trials is our own

566

00:22:10,870 --> 00:22:09,280

trial which is still ongoing so if you

567

00:22:12,470 --> 00:22:10,880

were to enroll in trimx you might get

568

00:22:13,590 --> 00:22:12,480

the same benefits that paul got or

569

00:22:16,149 --> 00:22:13,600

something

570

00:22:17,990 --> 00:22:16,159

at least analogous to those

571

00:22:20,390 --> 00:22:18,000

there's another trial going on in the

572

00:22:22,230 --> 00:22:20,400

bay area in which they take half of your

573

00:22:23,350 --> 00:22:22,240

plasma out and replace it with salt

574

00:22:25,190 --> 00:22:23,360

solution

575

00:22:26,710 --> 00:22:25,200

and if you happen to be a rat that that

576

00:22:28,870 --> 00:22:26,720

may work a little bit in terms of

577

00:22:30,710 --> 00:22:28,880

rejuvenating you we're actually going to

578

00:22:33,750 --> 00:22:30,720

be looking at combining that with our

579

00:22:35,830 --> 00:22:33,760

treatment in the near future

580

00:22:38,149 --> 00:22:35,840

there are other things that are

581

00:22:39,350 --> 00:22:38,159

you know kind of interesting these days

582

00:22:41,110 --> 00:22:39,360

but

583

00:22:44,390 --> 00:22:41,120

we're not quite sure what their effect

584

00:22:47,110 --> 00:22:44,400

is on aging per se especially in humans

585

00:22:49,669 --> 00:22:47,120

but alpha ketoglutarate uh has led to

586

00:22:52,310 --> 00:22:49,679

pretty interesting results in animals

587

00:22:54,390 --> 00:22:52,320

uh and uh you know there are other

588

00:22:56,390 --> 00:22:54,400

things like spermidine that might be

589

00:22:59,909 --> 00:22:56,400

interesting to to take

590

00:23:01,830 --> 00:22:59,919

um so i i think uh if you look around

591

00:23:02,950 --> 00:23:01,840

you'll find a few a few things that are

592

00:23:10,149 --> 00:23:02,960

out there

593

00:23:14,230 --> 00:23:11,990

okay and then there's the red wine

594

00:23:17,190 --> 00:23:14,240

molecule the nmm

595

00:23:19,110 --> 00:23:17,200

um i know metaphorum is a prescription

596

00:23:20,870 --> 00:23:19,120

drug and a lot of people use that for

597

00:23:22,390 --> 00:23:20,880

diabetes i know someone that's using

598

00:23:24,230 --> 00:23:22,400

that um but

599

00:23:27,669 --> 00:23:24,240

let's can we talk a little bit about how

600

00:23:29,590 --> 00:23:27,679

important blood sugar balances as well

601
00:23:33,190 --> 00:23:29,600
uh martin first let me say you mentioned

602
00:23:35,909 --> 00:23:33,200
resveratrol and metformin and those are

603
00:23:38,549 --> 00:23:35,919
two of the sort of cocktail components

604
00:23:42,310 --> 00:23:38,559
of our trim regimen

605
00:23:44,950 --> 00:23:42,320
and metformin is a very interesting

606
00:23:47,029 --> 00:23:44,960
life extension type drug in its own

607
00:23:50,549 --> 00:23:47,039
right but one of the reasons that we

608
00:23:52,470 --> 00:23:50,559
take that is one of the concerns about

609
00:23:55,269 --> 00:23:52,480
taking human growth hormone which is the

610
00:23:57,110 --> 00:23:55,279
principal ingredient in our cocktail is

611
00:23:58,950 --> 00:23:57,120
that it can cause insulin spikes and

612
00:24:01,830 --> 00:23:58,960
greg jump in if i go too far off the

613
00:24:04,789 --> 00:24:01,840

reservation here and so metformin which

614

00:24:06,950 --> 00:24:04,799

has its own anti-aging properties is

615

00:24:10,549 --> 00:24:06,960

designed to sort of tamp those insulin

616

00:24:14,070 --> 00:24:10,559

spikes um and there's there's also dhea

617

00:24:15,909 --> 00:24:14,080

resveratrol um vitamin d

618

00:24:17,430 --> 00:24:15,919

and i think

619

00:24:20,149 --> 00:24:17,440

yeah

620

00:24:24,549 --> 00:24:20,159

vitamin k

621

00:24:26,950 --> 00:24:24,559

speaking and paul's not even aware of that

622

00:24:29,110 --> 00:24:26,960

yet but yeah we're adding that too

623

00:24:33,269 --> 00:24:29,120

so

624

00:24:35,669 --> 00:24:33,279

metformin you mentioned uh in particular

625

00:24:38,630 --> 00:24:35,679

um of course that has received a lot of

626

00:24:41,029 --> 00:24:38,640

play recently because of near barzillai

627

00:24:43,110 --> 00:24:41,039

uh near has been trying to start a trial

628

00:24:46,870 --> 00:24:43,120

called the tame trial

629

00:24:49,430 --> 00:24:46,880

which is intended to force the fda to

630

00:24:51,190 --> 00:24:49,440

admit and approve a drug on the basis of

631

00:24:53,830 --> 00:24:51,200

its slowing aging

632

00:24:55,430 --> 00:24:53,840

so metformin is a pretty mild drug you

633

00:24:57,430 --> 00:24:55,440

can get into trouble if you take too

634

00:24:58,390 --> 00:24:57,440

much of it but if you play your cards

635

00:25:01,029 --> 00:24:58,400

right

636

00:25:03,350 --> 00:25:01,039

it's relatively well tolerated

637

00:25:05,190 --> 00:25:03,360

and in animal models it does all kinds

638

00:25:07,590 --> 00:25:05,200

of things that indicate it may have some

639

00:25:09,510 --> 00:25:07,600

effect on slowing down the rate of aging

640

00:25:11,590 --> 00:25:09,520

i don't think it reverses aging but

641

00:25:13,430 --> 00:25:11,600

slowing it down is pretty good

642

00:25:15,830 --> 00:25:13,440

and since we know that aging leads to

643

00:25:17,590 --> 00:25:15,840

all kinds of pathologies

644

00:25:19,510 --> 00:25:17,600

slowing down aging should be something

645

00:25:21,269 --> 00:25:19,520

that the fda would be interested in if

646

00:25:24,710 --> 00:25:21,279

the fda could be convinced that it was

647

00:25:26,630 --> 00:25:24,720

possible so the tame trial is intended

648

00:25:29,669 --> 00:25:26,640

to show that people are taking i think

649

00:25:32,470 --> 00:25:29,679

1500 milligrams of metformin every day

650

00:25:35,029 --> 00:25:32,480

for about 22 decades or so

651
00:25:36,070 --> 00:25:35,039
will have a slower rate of aging

652
00:25:38,470 --> 00:25:36,080
therefore

653
00:25:41,110 --> 00:25:38,480
less age-related disease

654
00:25:42,630 --> 00:25:41,120
and if they can prove that then they're

655
00:25:44,070 --> 00:25:42,640
going to have to

656
00:25:45,510 --> 00:25:44,080
uh you know

657
00:25:48,310 --> 00:25:45,520
the fda is going to have to deal with

658
00:25:50,950 --> 00:25:48,320
the fact that here's a drug that has

659
00:25:52,710 --> 00:25:50,960
slowed down aging in general and

660
00:25:54,630 --> 00:25:52,720
therefore needs to be approved as an

661
00:25:57,190 --> 00:25:54,640
anti-aging drug so that the actual

662
00:25:59,750 --> 00:25:57,200
purpose of the trial is not so much to

663
00:26:02,149 --> 00:25:59,760

extend people's life spans a long time

664

00:26:03,909 --> 00:26:02,159

but to force the fda to recognize aging

665

00:26:06,230 --> 00:26:03,919

as a treatable condition

666

00:26:08,149 --> 00:26:06,240

if that were to happen then we could get

667

00:26:10,470 --> 00:26:08,159

our own treatment through the fda much

668

00:26:11,830 --> 00:26:10,480

easier because you know we would be able

669

00:26:13,830 --> 00:26:11,840

to show that there's evidence that it

670

00:26:15,430 --> 00:26:13,840

deals with aging through the epigenetic

671

00:26:18,630 --> 00:26:15,440

clocks for example

672

00:26:20,149 --> 00:26:18,640

uh until something like that happens

673

00:26:22,230 --> 00:26:20,159

then we're going to have to get approved

674

00:26:24,630 --> 00:26:22,240

on the basis of the fact that our

675

00:26:26,789 --> 00:26:24,640

treatment in addition to reversing aging

676
00:26:28,630 --> 00:26:26,799
based on these epigenetic clocks

677
00:26:31,350 --> 00:26:28,640
improves kidney function

678
00:26:34,230 --> 00:26:31,360
uh and uh you know uh

679
00:26:35,190 --> 00:26:34,240
has other benefits that you can point to

680
00:26:39,029 --> 00:26:35,200
that

681
00:26:41,590 --> 00:26:39,039
may extend your lifespan and reduce your

682
00:26:43,830 --> 00:26:41,600
your risk of disease for example it

683
00:26:44,789 --> 00:26:43,840
seems to reduce the risk of prostate

684
00:26:47,830 --> 00:26:44,799
cancer

685
00:26:50,070 --> 00:26:47,840
so if we could show that our treatment

686
00:26:51,510 --> 00:26:50,080
prevented prostate cancer or prevented

687
00:26:52,789 --> 00:26:51,520
kidney disease

688
00:26:54,710 --> 00:26:52,799

maybe the fda would approve our

689

00:26:56,070 --> 00:26:54,720

treatment on that basis and then of

690

00:26:58,149 --> 00:26:56,080

course people would take it for the

691

00:26:59,750 --> 00:26:58,159

general anti-aging effect but it would

692

00:27:01,830 --> 00:26:59,760

be legal because you could prescribe it

693

00:27:04,549 --> 00:27:01,840

off label for these other

694

00:27:06,950 --> 00:27:04,559

these other endpoints

695

00:27:09,190 --> 00:27:06,960

now if you think about it our you know

696

00:27:11,830 --> 00:27:09,200

we're we're built more or less

697

00:27:13,750 --> 00:27:11,840

through evolution to last just a certain

698

00:27:14,870 --> 00:27:13,760

amount of time we breed we carry on the

699

00:27:17,269 --> 00:27:14,880

species

700

00:27:18,870 --> 00:27:17,279

that type of thing you know 20 30 years

701
00:27:21,110 --> 00:27:18,880
old something like that and then it's

702
00:27:23,510 --> 00:27:21,120
kind of all downhill from there but in

703
00:27:25,110 --> 00:27:23,520
your opinion if we could address

704
00:27:28,230 --> 00:27:25,120
everything that

705
00:27:31,029 --> 00:27:28,240
could that can be addressed how long do

706
00:27:33,110 --> 00:27:31,039
you think a human could live

707
00:27:34,789 --> 00:27:33,120
sustain with brain function

708
00:27:38,470 --> 00:27:34,799
normal brain function

709
00:27:40,870 --> 00:27:38,480
it's really hard to answer that question

710
00:27:43,110 --> 00:27:40,880
uh because we don't have

711
00:27:45,590 --> 00:27:43,120
the kind of baseline data that we truly

712
00:27:47,350 --> 00:27:45,600
need for that for example

713
00:27:50,070 --> 00:27:47,360

uh bruce yankner

714

00:27:52,950 --> 00:27:50,080

at harvard has

715

00:27:55,029 --> 00:27:52,960

produced evidence that age-related

716

00:27:58,149 --> 00:27:55,039

changes in brain function may be related

717

00:28:01,269 --> 00:27:58,159

to the accumulation of mutations

718

00:28:03,269 --> 00:28:01,279

but i've generated some evidence that

719

00:28:05,430 --> 00:28:03,279

mutation accumulation is an active

720

00:28:07,830 --> 00:28:05,440

process in other words that it's

721

00:28:10,389 --> 00:28:07,840

activated by events that take place

722

00:28:13,190 --> 00:28:10,399

before the mutations occur such as the

723

00:28:14,870 --> 00:28:13,200

reduction of dna repair pathways

724

00:28:17,110 --> 00:28:14,880

and so we don't really know what would

725

00:28:19,669 --> 00:28:17,120

happen if the reduction of dna repair

726

00:28:21,110 --> 00:28:19,679

pathways never took place all we can say

727

00:28:23,669 --> 00:28:21,120

is that there are people that make it to

728

00:28:26,070 --> 00:28:23,679

the age of 100 with their

729

00:28:28,470 --> 00:28:26,080

mentation in pretty good shape even

730

00:28:30,470 --> 00:28:28,480

people who live to 110 can still think

731

00:28:32,470 --> 00:28:30,480

and function at some level

732

00:28:34,789 --> 00:28:32,480

what would happen if they had never had

733

00:28:36,389 --> 00:28:34,799

that handicap of having their brain

734

00:28:39,110 --> 00:28:36,399

aging programmed

735

00:28:40,710 --> 00:28:39,120

starting from maybe the age of 20 or 30.

736

00:28:44,070 --> 00:28:40,720

they would probably make it to 200 or

737

00:28:46,470 --> 00:28:44,080

300 or longer who knows you know so we

738

00:28:47,750 --> 00:28:46,480

don't have a lot of information

739

00:28:49,669 --> 00:28:47,760

um

740

00:28:51,590 --> 00:28:49,679

i will say that you know there was this

741

00:28:53,269 --> 00:28:51,600

interesting experiment was done a long

742

00:28:55,669 --> 00:28:53,279

time ago in which

743

00:28:58,149 --> 00:28:55,679

they found out that if you starve a worm

744

00:28:59,909 --> 00:28:58,159

it gets younger for a while and then if

745

00:29:01,590 --> 00:28:59,919

you refeed it it starts getting older

746

00:29:04,470 --> 00:29:01,600

again but then you can starve it again

747

00:29:05,990 --> 00:29:04,480

and make it younger and by yo-yoing it

748

00:29:08,470 --> 00:29:06,000

back and forth like that they were able

749

00:29:10,310 --> 00:29:08,480

to extend the lifespan of the worm

750

00:29:12,389 --> 00:29:10,320

it's actually a beetle now that i think

751

00:29:14,630 --> 00:29:12,399

about it but it was a larval beetle

752

00:29:16,470 --> 00:29:14,640

uh by a factor of 13.

753

00:29:18,789 --> 00:29:16,480

so that would be you know the equivalent

754

00:29:19,590 --> 00:29:18,799

of a human living to over 1300 years or

755

00:29:22,149 --> 00:29:19,600

so

756

00:29:23,990 --> 00:29:22,159

uh and the the worms eventually didn't

757

00:29:26,789 --> 00:29:24,000

die they did die but they didn't die of

758

00:29:28,950 --> 00:29:26,799

aging they decide they died of a design

759

00:29:31,430 --> 00:29:28,960

contradiction because they were never

760

00:29:33,990 --> 00:29:31,440

intended by nature to live that long and

761

00:29:36,549 --> 00:29:34,000

so they they had another issue that in

762

00:29:38,710 --> 00:29:36,559

normal life would never be an issue but

763

00:29:41,029 --> 00:29:38,720

uh and once you live 13 times longer it

764

00:29:43,190 --> 00:29:41,039

eventually builds up so

765

00:29:45,190 --> 00:29:43,200

in addition to aging per se we may have

766

00:29:47,190 --> 00:29:45,200

to look at design contradictions like

767

00:29:49,029 --> 00:29:47,200

that eventually but we'll have plenty of

768

00:29:49,990 --> 00:29:49,039

time to figure that out as we go along i

769

00:29:53,190 --> 00:29:50,000

hope

770

00:29:55,669 --> 00:29:53,200

so i just would say that um

771

00:29:58,950 --> 00:29:55,679

if if we didn't die of all of the causes

772

00:30:01,750 --> 00:29:58,960

of death that uh are part and parcel of

773

00:30:03,590 --> 00:30:01,760

aging these days i think we would live a

774

00:30:06,389 --> 00:30:03,600

very long time

775

00:30:09,430 --> 00:30:06,399

uh if statistically if

776

00:30:11,190 --> 00:30:09,440

the lowest mortality risk that you have

777

00:30:13,430 --> 00:30:11,200

is about the time you go through puberty

778

00:30:15,669 --> 00:30:13,440

it's all downhill from there uh and

779

00:30:18,149 --> 00:30:15,679

before puberty you're too young you're

780

00:30:21,029 --> 00:30:18,159

vulnerable but when you're about uh

781

00:30:24,149 --> 00:30:21,039

reaching your sexual maturation point

782

00:30:26,630 --> 00:30:24,159

you're pretty robust as an individual uh

783

00:30:29,029 --> 00:30:26,640

and uh if everybody could go back to

784

00:30:31,029 --> 00:30:29,039

that sort of optimum

785

00:30:35,029 --> 00:30:31,039

uh

786

00:30:36,870 --> 00:30:35,039

mortality

787

00:30:38,950 --> 00:30:36,880

we would have about a half-life of

788

00:30:41,590 --> 00:30:38,960

somewhere over 900 years

789

00:30:43,190 --> 00:30:41,600

like 930 years something like that so

790

00:30:45,350 --> 00:30:43,200

that would be uh

791

00:30:47,269 --> 00:30:45,360

based on the uh

792

00:30:48,230 --> 00:30:47,279

accumulation of accidents as a cause of

793

00:30:50,630 --> 00:30:48,240

death

794

00:30:52,310 --> 00:30:50,640

but of course once we live to 900 years

795

00:30:55,510 --> 00:30:52,320

we'll probably be more careful about

796

00:30:58,470 --> 00:30:55,520

avoiding accidents too so i would say uh

797

00:30:59,990 --> 00:30:58,480

there's no obvious limit uh i think uh

798

00:31:02,230 --> 00:31:00,000

in principle we should be able to push

799

00:31:03,669 --> 00:31:02,240

things out quite a quite a distance but

800

00:31:05,190 --> 00:31:03,679

of course we have to start somewhere so

801
00:31:07,669 --> 00:31:05,200
that's what paul and i are trying to do

802
00:31:10,149 --> 00:31:07,679
now yeah and i think i think we're we're

803
00:31:12,630 --> 00:31:10,159
knocking on the door of

804
00:31:15,269 --> 00:31:12,640
call it lifetime escape velocity

805
00:31:16,630 --> 00:31:15,279
or functional immortality where we can

806
00:31:18,470 --> 00:31:16,640
repair

807
00:31:20,789 --> 00:31:18,480
like aubrey de gray says things like

808
00:31:22,470 --> 00:31:20,799
mechanics in the body and scoop out that

809
00:31:24,310 --> 00:31:22,480
junk in the brain that greg is talking

810
00:31:26,470 --> 00:31:24,320
about and yeah i mean

811
00:31:29,990 --> 00:31:26,480
for us i just don't know i mean

812
00:31:31,590 --> 00:31:30,000
theoretically according to our clocks

813
00:31:33,430 --> 00:31:31,600

he's younger now than he was five years

814

00:31:35,750 --> 00:31:33,440

ago wait a minute we got two people

815

00:31:37,909 --> 00:31:35,760

talking here okay sorry that's all right

816

00:31:39,669 --> 00:31:37,919

yeah it won't it won't the the threat

817

00:31:41,669 --> 00:31:39,679

won't be so much from internal because

818

00:31:44,149 --> 00:31:41,679

we're getting a better handle on that it

819

00:31:46,789 --> 00:31:44,159

will be being run over by a bus things

820

00:31:47,990 --> 00:31:46,799

like that so the real challenge

821

00:31:50,389 --> 00:31:48,000

after

822

00:31:53,830 --> 00:31:50,399

working on telomeres and clearing out

823

00:31:57,029 --> 00:31:53,840

the brain and the thymus is really then

824

00:31:59,750 --> 00:31:57,039

the harder step of uploading

825

00:32:02,630 --> 00:31:59,760

and having a backup for whatever you

826

00:32:05,590 --> 00:32:02,640

consider your you to be because the

827

00:32:08,389 --> 00:32:05,600

failure point is being in this substrate

828

00:32:09,750 --> 00:32:08,399

and we're shoring it up really well but

829

00:32:12,710 --> 00:32:09,760

that's still what's going to be the

830

00:32:15,110 --> 00:32:12,720

glaring weakness in 100 years

831

00:32:16,789 --> 00:32:15,120

wow yeah yeah you wouldn't you wouldn't

832

00:32:18,549 --> 00:32:16,799

necessarily even have to sort of upload

833

00:32:21,029 --> 00:32:18,559

yourself into a computer if you could

834

00:32:23,029 --> 00:32:21,039

distribute your consciousness over a

835

00:32:24,789 --> 00:32:23,039

large volume of space

836

00:32:27,430 --> 00:32:24,799

uh since uh

837

00:32:28,789 --> 00:32:27,440

light travels very rapidly

838

00:32:30,310 --> 00:32:28,799

you could sort of smear your

839

00:32:32,710 --> 00:32:30,320

consciousness over

840

00:32:34,389 --> 00:32:32,720

say a planetary scale which would make

841

00:32:36,630 --> 00:32:34,399

it very hard to be killed by any

842

00:32:39,110 --> 00:32:36,640

discrete event happening anywhere on a

843

00:32:41,430 --> 00:32:39,120

subplanetary scale so there's all kinds

844

00:32:43,750 --> 00:32:41,440

of interesting possibilities for life

845

00:32:46,389 --> 00:32:43,760

extension in the future once we overcome

846

00:32:48,549 --> 00:32:46,399

the the initial problems we have now

847

00:32:50,789 --> 00:32:48,559

martin he's giving a great segue to ufos

848

00:32:53,669 --> 00:32:50,799

there are you gonna run with that

849

00:32:55,509 --> 00:32:53,679

no no you can do that um i was just

850

00:32:58,789 --> 00:32:55,519

thinking how cheap life insurance would

851
00:33:02,870 --> 00:32:59,909
that's true

852
00:33:04,549 --> 00:33:02,880
yeah so um it's funny someone mentioned

853
00:33:06,630 --> 00:33:04,559
something about keith richards that that

854
00:33:09,029 --> 00:33:06,640
is a that is that is pretty funny i have

855
00:33:10,950 --> 00:33:09,039
to say i want to talk about

856
00:33:14,149 --> 00:33:10,960
jellyfish

857
00:33:17,269 --> 00:33:14,159
can do

858
00:33:19,909 --> 00:33:17,279
they can they can basically go

859
00:33:21,190 --> 00:33:19,919
basically die and be reborn

860
00:33:22,549 --> 00:33:21,200
i mean i don't know if you've looked

861
00:33:25,029 --> 00:33:22,559
into that at all have you ever heard

862
00:33:26,549 --> 00:33:25,039
about that i'm not sure about the dying

863
00:33:28,470 --> 00:33:26,559

and big reborn part i think i may have

864

00:33:29,430 --> 00:33:28,480

heard of that

865

00:33:31,430 --> 00:33:29,440

there are

866

00:33:33,430 --> 00:33:31,440

organisms similar to jellyfish that

867

00:33:35,509 --> 00:33:33,440

never age because they can regenerate

868

00:33:37,190 --> 00:33:35,519

their body parts at all times like

869

00:33:39,750 --> 00:33:37,200

hydras for example

870

00:33:41,509 --> 00:33:39,760

uh they're related uh to to the

871

00:33:43,509 --> 00:33:41,519

jellyfish but i think i may have heard

872

00:33:45,990 --> 00:33:43,519

that story but you perhaps you could

873

00:33:48,149 --> 00:33:46,000

refresh the uh

874

00:33:51,110 --> 00:33:48,159

audience about it yeah i think i think

875

00:33:55,350 --> 00:33:51,120

you may be uh closer to it like they can

876

00:33:58,230 --> 00:33:55,360

just re they can regrow themselves yes

877

00:34:00,389 --> 00:33:58,240

yeah but yeah before i go off on a topic

878

00:34:01,990 --> 00:34:00,399

like that i should uh

879

00:34:05,110 --> 00:34:02,000

they they just do like a complete

880

00:34:07,750 --> 00:34:05,120

regeneration or something like that um

881

00:34:09,990 --> 00:34:07,760

it says right here i'm just reading

882

00:34:12,470 --> 00:34:10,000

when they die they sink to the floor and

883

00:34:14,069 --> 00:34:12,480

they begin to decay amazingly the cells

884

00:34:15,430 --> 00:34:14,079

re-agitate

885

00:34:17,829 --> 00:34:15,440

and uh

886

00:34:19,510 --> 00:34:17,839

but anyway i i think

887

00:34:21,510 --> 00:34:19,520

what i'm getting at by just mentioning

888

00:34:24,149 --> 00:34:21,520

this at all is i think that's another

889

00:34:26,950 --> 00:34:24,159

point of research something yes i can do

890

00:34:29,510 --> 00:34:26,960

this type of thing yeah i think i think

891

00:34:31,909 --> 00:34:29,520

regenerating new cells is not really

892

00:34:34,470 --> 00:34:31,919

much of a problem in theory

893

00:34:37,510 --> 00:34:34,480

we have stem cells that reproduce

894

00:34:39,030 --> 00:34:37,520

other tissues in the body and as long as

895

00:34:41,109 --> 00:34:39,040

the stem cells keep producing new

896

00:34:43,829 --> 00:34:41,119

tissues you can turn over

897

00:34:45,909 --> 00:34:43,839

uh tissues indefinitely in theory as

898

00:34:47,190 --> 00:34:45,919

long as you keep the stem cells happy

899

00:34:48,790 --> 00:34:47,200

and

900

00:34:50,389 --> 00:34:48,800

you know there's a lot of technologies

901
00:34:52,389 --> 00:34:50,399
coming along for that

902
00:34:54,310 --> 00:34:52,399
uh but it's the brain that you have to

903
00:34:56,550 --> 00:34:54,320
worry about because we we can't turn

904
00:34:58,870 --> 00:34:56,560
over the brain in the same way because

905
00:35:00,870 --> 00:34:58,880
we we have memories that we want to hold

906
00:35:03,030 --> 00:35:00,880
on to in the brain but

907
00:35:04,470 --> 00:35:03,040
we don't know a lot about how that works

908
00:35:07,190 --> 00:35:04,480
i can tell you

909
00:35:09,510 --> 00:35:07,200
that the brain does turn over and yet

910
00:35:11,670 --> 00:35:09,520
the memories stay there so i think the

911
00:35:14,150 --> 00:35:11,680
brain is clever enough to be able to do

912
00:35:16,550 --> 00:35:14,160
housekeeping and and turn over damaged

913
00:35:18,390 --> 00:35:16,560

molecules and still retain the memories

914

00:35:20,230 --> 00:35:18,400

in some way and it's a very very

915

00:35:23,829 --> 00:35:20,240

interesting uh

916

00:35:26,069 --> 00:35:23,839

question but if that's the case uh then

917

00:35:28,230 --> 00:35:26,079

perhaps just augmenting or maintaining

918

00:35:30,470 --> 00:35:28,240

the current turnover mechanisms that we

919

00:35:33,030 --> 00:35:30,480

already have would allow our brains to

920

00:35:34,790 --> 00:35:33,040

function pretty much indefinitely

921

00:35:37,190 --> 00:35:34,800

there may be an issue as to whether

922

00:35:39,030 --> 00:35:37,200

there's a finite uh memory storage

923

00:35:41,349 --> 00:35:39,040

capacity in the brain

924

00:35:44,069 --> 00:35:41,359

but like i was saying before if you can

925

00:35:46,310 --> 00:35:44,079

have a lot of brain atrophy and still

926
00:35:48,150 --> 00:35:46,320
have good cognitive function out to the

927
00:35:51,349 --> 00:35:48,160
age of 110

928
00:35:53,750 --> 00:35:51,359
then how far could you go if your brain

929
00:35:55,589 --> 00:35:53,760
mass was conserved perfectly

930
00:35:58,310 --> 00:35:55,599
uh you know instead you could probably

931
00:36:00,150 --> 00:35:58,320
go out at least to 400 years so i think

932
00:36:01,510 --> 00:36:00,160
once once we get out to ages like that

933
00:36:03,270 --> 00:36:01,520
then we'll

934
00:36:06,230 --> 00:36:03,280
you know have more time to pay attention

935
00:36:09,430 --> 00:36:06,240
to that as a possible limiting factor

936
00:36:11,510 --> 00:36:09,440
now what about um releasing endorphins

937
00:36:13,750 --> 00:36:11,520
it's like stimulating parts of your

938
00:36:15,750 --> 00:36:13,760

brain and things like that is that does

939

00:36:17,349 --> 00:36:15,760

that is that that has to be a positive

940

00:36:19,910 --> 00:36:17,359

effect

941

00:36:22,230 --> 00:36:19,920

well sure so i mean i think what that

942

00:36:23,190 --> 00:36:22,240

touches on with respect to longevity is

943

00:36:25,030 --> 00:36:23,200

that

944

00:36:26,950 --> 00:36:25,040

people who are happier live longer than

945

00:36:28,630 --> 00:36:26,960

people who are unhappy

946

00:36:30,390 --> 00:36:28,640

people are having a good time want to

947

00:36:31,510 --> 00:36:30,400

continue to have a good time

948

00:36:33,190 --> 00:36:31,520

and it's

949

00:36:35,270 --> 00:36:33,200

it's not just psychological it's also

950

00:36:36,310 --> 00:36:35,280

physiological because our brain talks to

951
00:36:38,310 --> 00:36:36,320
our body

952
00:36:40,150 --> 00:36:38,320
uh we have things called stress hormones

953
00:36:42,310 --> 00:36:40,160
that don't do us a lot of good in the

954
00:36:43,670 --> 00:36:42,320
long run if they're activated all the

955
00:36:46,470 --> 00:36:43,680
time

956
00:36:49,030 --> 00:36:46,480
and when we release oxytocin you know we

957
00:36:50,790 --> 00:36:49,040
feel good and warm fuzzy feelings and it

958
00:36:53,349 --> 00:36:50,800
turns out that that hormone also is

959
00:36:57,030 --> 00:36:53,359
related to preventing aging

960
00:36:59,190 --> 00:36:57,040
as programmed by the hypothalamus so uh

961
00:37:02,150 --> 00:36:59,200
yeah i think if you feel good you're

962
00:37:03,430 --> 00:37:02,160
going to do better uh and uh if you do

963
00:37:06,310 --> 00:37:03,440

better you're going to feel good so it's

964

00:37:07,190 --> 00:37:06,320

kind of a a positive cycle

965

00:37:09,270 --> 00:37:07,200

yeah

966

00:37:10,710 --> 00:37:09,280

i've had one of those years you know

967

00:37:12,870 --> 00:37:10,720

even though it's been covered i've just

968

00:37:15,109 --> 00:37:12,880

had i've had uh

969

00:37:18,150 --> 00:37:15,119

uh things really nice happen this year

970

00:37:20,150 --> 00:37:18,160

that um i feel really good about so i

971

00:37:21,030 --> 00:37:20,160

feel like i'm gonna live longer

972

00:37:22,390 --> 00:37:21,040

good

973

00:37:25,510 --> 00:37:22,400

yeah yeah

974

00:37:27,589 --> 00:37:25,520

so um one of the things also i was

975

00:37:30,310 --> 00:37:27,599

thinking about when when we're looking

976

00:37:32,069 --> 00:37:30,320

at the different things that that people

977

00:37:34,710 --> 00:37:32,079

can do is uh

978

00:37:38,069 --> 00:37:34,720

uh paul i heard you mention

979

00:37:40,310 --> 00:37:38,079

um a hallucinogen i believe it was

980

00:37:42,230 --> 00:37:40,320

when you were on my show and i'm trying

981

00:37:46,550 --> 00:37:42,240

to remember what it was it's a

982

00:37:48,310 --> 00:37:46,560

d dm what what was it that you had taken

983

00:37:51,109 --> 00:37:48,320

at one time

984

00:37:55,910 --> 00:37:51,119

i guess dmt and this is not

985

00:37:57,190 --> 00:37:55,920

part of the trim trial i mean oh oh oh

986

00:37:59,430 --> 00:37:57,200

that's right

987

00:38:01,829 --> 00:37:59,440

maybe i can lobby for its inclusion in

988

00:38:03,109 --> 00:38:01,839

the subsequent trial uh but i've got a

989

00:38:05,510 --> 00:38:03,119

little bit of a hurdle to get over with

990

00:38:07,750 --> 00:38:05,520

uh the esteemed dr fay on that one i

991

00:38:08,630 --> 00:38:07,760

think um we'll have to have a talk about

992

00:38:11,589 --> 00:38:08,640

that

993

00:38:14,310 --> 00:38:11,599

yeah so so dmt is um

994

00:38:16,230 --> 00:38:14,320

well i i guess i could make the the the

995

00:38:19,589 --> 00:38:16,240

connective tissue here

996

00:38:21,750 --> 00:38:19,599

in terms of serotonins and endorphins

997

00:38:24,550 --> 00:38:21,760

and being happier living longer i think

998

00:38:25,750 --> 00:38:24,560

that's sort of a tenuous connection but

999

00:38:28,390 --> 00:38:25,760

um

1000

00:38:31,430 --> 00:38:28,400

in my experience psychedelics

1001
00:38:33,670 --> 00:38:31,440
have can have a profound impact

1002
00:38:35,589 --> 00:38:33,680
on someone's outlook on life feeling

1003
00:38:37,670 --> 00:38:35,599
more connected or

1004
00:38:40,390 --> 00:38:37,680
more relaxed etc

1005
00:38:43,190 --> 00:38:40,400
and dmt is a a really

1006
00:38:45,190 --> 00:38:43,200
i think intriguing substance that's in a

1007
00:38:46,790 --> 00:38:45,200
class apart from

1008
00:38:49,430 --> 00:38:46,800
other psychedelics that i'm aware of

1009
00:38:50,630 --> 00:38:49,440
it's stronger and it's also more natural

1010
00:38:52,550 --> 00:38:50,640
occurring

1011
00:38:54,470 --> 00:38:52,560
is secreted by the pineal gland and the

1012
00:38:56,310 --> 00:38:54,480
human brain and it's sort of cursing

1013
00:38:57,670 --> 00:38:56,320

throughout the natural kingdom

1014

00:38:58,710 --> 00:38:57,680

um and

1015

00:39:02,630 --> 00:38:58,720

it

1016

00:39:04,150 --> 00:39:02,640

is that in reading a lot of the research

1017

00:39:07,190 --> 00:39:04,160

reports of

1018

00:39:10,470 --> 00:39:07,200

case studies or of user reports it kind

1019

00:39:12,310 --> 00:39:10,480

of echoes the early days of ufo reports

1020

00:39:14,710 --> 00:39:12,320

in some of the patterns emerging of some

1021

00:39:18,390 --> 00:39:14,720

of the archetypes of things that people

1022

00:39:23,270 --> 00:39:20,470

wow um and

1023

00:39:25,430 --> 00:39:23,280

what about um i watch this great show i

1024

00:39:28,390 --> 00:39:25,440

love to watch these documentaries and

1025

00:39:30,710 --> 00:39:28,400

there was one called fantastic fun fungi

1026

00:39:33,109 --> 00:39:30,720

or fungi

1027

00:39:36,150 --> 00:39:33,119

that that was absolutely fascinating to

1028

00:39:37,349 --> 00:39:36,160

me and how interconnected everything

1029

00:39:38,870 --> 00:39:37,359

seems to be

1030

00:39:41,349 --> 00:39:38,880

in so many ways

1031

00:39:43,109 --> 00:39:41,359

and yeah they feature paul stamets who

1032

00:39:45,910 --> 00:39:43,119

is the sort of

1033

00:39:47,349 --> 00:39:45,920

uh fungal hero of the world and one of

1034

00:39:50,150 --> 00:39:47,359

the interesting things to your point

1035

00:39:51,990 --> 00:39:50,160

martin about connectedness is that let's

1036

00:39:54,069 --> 00:39:52,000

say you have a forest underneath the

1037

00:39:56,870 --> 00:39:54,079

forest floor in the ground there's a

1038

00:39:58,470 --> 00:39:56,880

michael rizal network that's sort of a

1039

00:40:01,270 --> 00:39:58,480

fungal router

1040

00:40:04,470 --> 00:40:01,280

that connects to all the trees and

1041

00:40:07,270 --> 00:40:04,480

channels resources to trees based on

1042

00:40:09,990 --> 00:40:07,280

seasonality and their particular needs

1043

00:40:12,230 --> 00:40:10,000

and it's a living organism that is

1044

00:40:14,870 --> 00:40:12,240

localized intelligence

1045

00:40:17,190 --> 00:40:14,880

without any man-made interference that

1046

00:40:19,990 --> 00:40:17,200

is sort of helping the individual

1047

00:40:23,270 --> 00:40:20,000

organisms in the forest

1048

00:40:24,870 --> 00:40:23,280

it's amazing just amazing and and i

1049

00:40:27,190 --> 00:40:24,880

think we're going to know more and more

1050

00:40:28,390 --> 00:40:27,200

about that you know as as time the more

1051
00:40:30,710 --> 00:40:28,400
the study

1052
00:40:31,829 --> 00:40:30,720
that goes into it um there's something

1053
00:40:34,230 --> 00:40:31,839
up here

1054
00:40:36,390 --> 00:40:34,240
because some the average person a lot of

1055
00:40:38,710 --> 00:40:36,400
people may feel this way this is a text

1056
00:40:40,470 --> 00:40:38,720
i'm putting up here from raphael uh what

1057
00:40:43,190 --> 00:40:40,480
good is living longer if your body

1058
00:40:45,030 --> 00:40:43,200
begins to fail why bother

1059
00:40:48,390 --> 00:40:45,040
yeah i think if your body begins to fail

1060
00:40:52,630 --> 00:40:49,430
okay

1061
00:40:53,750 --> 00:40:52,640
so don't rest i think it's just

1062
00:40:55,030 --> 00:40:53,760
right

1063
00:40:56,710 --> 00:40:55,040

that's not what we're talking about

1064

00:40:58,950 --> 00:40:56,720

we're talking about keeping your body

1065

00:41:00,630 --> 00:40:58,960

healthy and therefore extending your

1066

00:41:01,829 --> 00:41:00,640

longevity as well

1067

00:41:05,109 --> 00:41:01,839

yeah

1068

00:41:06,550 --> 00:41:05,119

and greg and i've heard this kind of

1069

00:41:08,230 --> 00:41:06,560

question before it's like why would i

1070

00:41:10,870 --> 00:41:08,240

want to live an extra 30 years in a

1071

00:41:13,270 --> 00:41:10,880

wheelchair or on a ventilator you know

1072

00:41:15,910 --> 00:41:13,280

we're not we're talking about a still

1073

00:41:19,430 --> 00:41:15,920

hopefully short morbidity period but a

1074

00:41:21,109 --> 00:41:19,440

much longer period of vitality

1075

00:41:22,950 --> 00:41:21,119

i see yeah i mean

1076

00:41:23,990 --> 00:41:22,960

i mean it's always about the quality of

1077

00:41:27,270 --> 00:41:24,000

life

1078

00:41:30,230 --> 00:41:27,280

i mean who who wants to live miserably

1079

00:41:32,309 --> 00:41:30,240

you know um so and i think it's an

1080

00:41:34,470 --> 00:41:32,319

important you know the number one thing

1081

00:41:36,069 --> 00:41:34,480

i would imagine you would have to say

1082

00:41:37,349 --> 00:41:36,079

here the number one thing is taking care

1083

00:41:39,510 --> 00:41:37,359

of yourself

1084

00:41:41,510 --> 00:41:39,520

and and what does that mean

1085

00:41:42,309 --> 00:41:41,520

diet exercise

1086

00:41:44,390 --> 00:41:42,319

uh

1087

00:41:46,710 --> 00:41:44,400

don't smoke i know there's there may be

1088

00:41:48,470 --> 00:41:46,720

people listening right now that smoke um

1089

00:41:49,829 --> 00:41:48,480

it's it's not going to do you any good i

1090

00:41:52,230 --> 00:41:49,839

mean you think of what it does to your

1091

00:41:55,349 --> 00:41:52,240

skin for one how much it ages

1092

00:41:57,829 --> 00:41:55,359

um ages people and and just in just the

1093

00:41:58,790 --> 00:41:57,839

you know the skin alone um but

1094

00:41:59,670 --> 00:41:58,800

also

1095

00:42:01,910 --> 00:41:59,680

uh

1096

00:42:03,510 --> 00:42:01,920

you know and and get the right nutrition

1097

00:42:05,670 --> 00:42:03,520

you know i mean what else

1098

00:42:07,829 --> 00:42:05,680

is there for the average person um you

1099

00:42:09,910 --> 00:42:07,839

know exercise of course is really a big

1100

00:42:12,390 --> 00:42:09,920

thing in that as well

1101
00:42:14,790 --> 00:42:12,400
when you hear somebody greg already said

1102
00:42:16,550 --> 00:42:14,800
that you're brilliant and soft-spoken

1103
00:42:19,589 --> 00:42:16,560
when you hear somebody like greg fay who

1104
00:42:20,710 --> 00:42:19,599
does not sort of go out on a limb

1105
00:42:22,390 --> 00:42:20,720
actually

1106
00:42:26,390 --> 00:42:22,400
bandy around

1107
00:42:30,870 --> 00:42:26,400
centuries of possible lifespan we're on

1108
00:42:32,550 --> 00:42:30,880
the cusp of far greater lifespans so you

1109
00:42:35,829 --> 00:42:32,560
really want to take care of yourself it

1110
00:42:38,710 --> 00:42:35,839
would really be a shame to be the last

1111
00:42:41,670 --> 00:42:38,720
generation or the last individuals that

1112
00:42:44,630 --> 00:42:41,680
smoked themselves out of getting on that

1113
00:42:46,870 --> 00:42:44,640

bus of lifetime escape velocity

1114

00:42:48,630 --> 00:42:46,880

right right and

1115

00:42:50,550 --> 00:42:48,640

um you know going back to the amount of

1116

00:42:53,270 --> 00:42:50,560

time we're supposed to live

1117

00:42:55,349 --> 00:42:53,280

um when things you mentioned greg i

1118

00:42:57,910 --> 00:42:55,359

believe you mentioned that your body

1119

00:43:00,150 --> 00:42:57,920

things start to change right after

1120

00:43:02,150 --> 00:43:00,160

puberty which is really

1121

00:43:05,589 --> 00:43:02,160

pretty scary it's it's kind of all all

1122

00:43:07,430 --> 00:43:05,599

downhill from there is it all downhill

1123

00:43:09,349 --> 00:43:07,440

in your entire

1124

00:43:11,670 --> 00:43:09,359

body or just

1125

00:43:14,390 --> 00:43:11,680

parts of your body or brain

1126

00:43:17,109 --> 00:43:14,400

well in in terms of certain

1127

00:43:19,589 --> 00:43:17,119

things like muscular strength

1128

00:43:21,910 --> 00:43:19,599

uh you continue to get stronger and

1129

00:43:23,030 --> 00:43:21,920

continue to grow to some extent after

1130

00:43:24,069 --> 00:43:23,040

puberty

1131

00:43:25,670 --> 00:43:24,079

uh

1132

00:43:28,150 --> 00:43:25,680

so in some ways you're becoming more

1133

00:43:30,550 --> 00:43:28,160

powerful and more formidable as an

1134

00:43:33,510 --> 00:43:30,560

organism uh but at the same time your

1135

00:43:35,750 --> 00:43:33,520

immune system is beginning to go to hell

1136

00:43:38,309 --> 00:43:35,760

as you go through uh puberty it triggers

1137

00:43:40,069 --> 00:43:38,319

the destruction of your immune system

1138

00:43:41,270 --> 00:43:40,079

and eventually that catches up with you

1139

00:43:42,870 --> 00:43:41,280

and starts dragging the rest of your

1140

00:43:45,109 --> 00:43:42,880

body down with it

1141

00:43:48,150 --> 00:43:45,119

also as you go through puberty you

1142

00:43:49,430 --> 00:43:48,160

reduce growth hormone uh and you reduce

1143

00:43:51,030 --> 00:43:49,440

dhea

1144

00:43:52,550 --> 00:43:51,040

and it turns out the growth hormone

1145

00:43:54,230 --> 00:43:52,560

although it's sort of a double-edged

1146

00:43:56,069 --> 00:43:54,240

sword

1147

00:43:57,990 --> 00:43:56,079

is necessary for maintaining all kinds

1148

00:44:00,950 --> 00:43:58,000

of functions as you get older

1149

00:44:04,150 --> 00:44:00,960

and dha as well

1150

00:44:06,950 --> 00:44:04,160

does things like help you not get fat

1151
00:44:08,309 --> 00:44:06,960
you know and so as dhea goes down

1152
00:44:09,829 --> 00:44:08,319
you're subjected to more and more

1153
00:44:11,829 --> 00:44:09,839
problems so

1154
00:44:14,390 --> 00:44:11,839
i it seems like it all sort of stems

1155
00:44:16,230 --> 00:44:14,400
from puberty that there are

1156
00:44:17,829 --> 00:44:16,240
interesting cases you know in the

1157
00:44:19,430 --> 00:44:17,839
scientific literature in which if you

1158
00:44:20,829 --> 00:44:19,440
prevent puberty

1159
00:44:23,829 --> 00:44:20,839
you can prevent

1160
00:44:25,670 --> 00:44:23,839
aging uh that worm experiment that i

1161
00:44:26,390 --> 00:44:25,680
told you in which the worms are able to

1162
00:44:29,750 --> 00:44:26,400
live

1163
00:44:31,430 --> 00:44:29,760

uh 13 times longer than the normal

1164

00:44:34,069 --> 00:44:31,440

that was accomplished by preventing them

1165

00:44:36,150 --> 00:44:34,079

from actually becoming adults so you

1166

00:44:37,030 --> 00:44:36,160

know the peter pan story had some merit

1167

00:44:38,950 --> 00:44:37,040

to it

1168

00:44:41,510 --> 00:44:38,960

uh you know if you if you don't uh

1169

00:44:43,190 --> 00:44:41,520

become an adult you may not age

1170

00:44:46,150 --> 00:44:43,200

uh but since

1171

00:44:48,870 --> 00:44:46,160

the old body the adult body has exactly

1172

00:44:51,030 --> 00:44:48,880

the same genes as the young body

1173

00:44:53,349 --> 00:44:51,040

uh you still know everything you need to

1174

00:44:54,790 --> 00:44:53,359

know to stay young when you're an adult

1175

00:44:57,190 --> 00:44:54,800

it's just you're not using that

1176

00:44:59,270 --> 00:44:57,200

information anymore so if we can turn

1177

00:45:00,950 --> 00:44:59,280

that information back on again and

1178

00:45:02,710 --> 00:45:00,960

maintain your

1179

00:45:04,309 --> 00:45:02,720

you know sort of life maintenance

1180

00:45:05,750 --> 00:45:04,319

systems the way they were when you were

1181

00:45:07,990 --> 00:45:05,760

young

1182

00:45:09,030 --> 00:45:08,000

you should again go down to a mortality

1183

00:45:11,670 --> 00:45:09,040

rate that's

1184

00:45:13,030 --> 00:45:11,680

affected much much much much less by

1185

00:45:15,990 --> 00:45:13,040

aging if not

1186

00:45:18,390 --> 00:45:16,000

you know if if anything at all by aging

1187

00:45:21,270 --> 00:45:18,400

and what about antioxidants as far as

1188

00:45:24,150 --> 00:45:21,280

the type and other types of food that

1189

00:45:27,270 --> 00:45:24,160

works pretty well for like at least

1190

00:45:28,790 --> 00:45:27,280

slowing down aging is there such a thing

1191

00:45:31,750 --> 00:45:28,800

yeah so

1192

00:45:33,829 --> 00:45:31,760

paul may want to comment on this too but

1193

00:45:35,670 --> 00:45:33,839

for many years

1194

00:45:37,750 --> 00:45:35,680

the american aging association was led

1195

00:45:39,750 --> 00:45:37,760

by a guy named denim harmon

1196

00:45:42,390 --> 00:45:39,760

and denim harman i used to know he was a

1197

00:45:43,910 --> 00:45:42,400

nice guy he invented the free radical

1198

00:45:46,630 --> 00:45:43,920

theory of aging

1199

00:45:48,230 --> 00:45:46,640

and dirk pearson and sandy shaw used to

1200

00:45:49,829 --> 00:45:48,240

go on the merv griffin show and talk

1201

00:45:51,829 --> 00:45:49,839

about how using antioxidants would

1202

00:45:53,829 --> 00:45:51,839

extend your lifespan according to dave

1203

00:45:56,390 --> 00:45:53,839

you know denim harmon's theory

1204

00:45:58,950 --> 00:45:56,400

and so uh harmon started off early in

1205

00:46:02,390 --> 00:45:58,960

his career by extending the lifespan of

1206

00:46:04,550 --> 00:46:02,400

rhodesis by 50 by feeding them bht

1207

00:46:06,950 --> 00:46:04,560

which is a you know an antioxidant

1208

00:46:08,630 --> 00:46:06,960

that's used to preserve potato chips and

1209

00:46:10,630 --> 00:46:08,640

so the thought was well if it preserves

1210

00:46:12,390 --> 00:46:10,640

potato chips maybe it will preserve me

1211

00:46:14,230 --> 00:46:12,400

too but uh

1212

00:46:15,109 --> 00:46:14,240

since then there's been a lot of work

1213

00:46:19,670 --> 00:46:15,119

done

1214

00:46:20,950 --> 00:46:19,680

in the laboratory of arlen richardson in

1215

00:46:22,069 --> 00:46:20,960

texas

1216

00:46:24,870 --> 00:46:22,079

looked at

1217

00:46:27,109 --> 00:46:24,880

various genetic mutants in which

1218

00:46:29,030 --> 00:46:27,119

antioxidant defenses so you know you can

1219

00:46:31,670 --> 00:46:29,040

eat bht but

1220

00:46:33,990 --> 00:46:31,680

that alone is not the main defense that

1221

00:46:34,950 --> 00:46:34,000

you have most of your defenses are built

1222

00:46:36,950 --> 00:46:34,960

in

1223

00:46:39,270 --> 00:46:36,960

so you have enzymes that get rid of free

1224

00:46:42,390 --> 00:46:39,280

radicals and other oxidants

1225

00:46:44,150 --> 00:46:42,400

and you can knock those defenses out

1226
00:46:47,270 --> 00:46:44,160
through genetic mutations and see what

1227
00:46:50,150 --> 00:46:47,280
happens and what you see in every case

1228
00:46:52,790 --> 00:46:50,160
and he did like 20 of these mutations is

1229
00:46:54,950 --> 00:46:52,800
that yeah all of these oxidative damage

1230
00:46:57,750 --> 00:46:54,960
products accumulate when you do that and

1231
00:46:59,430 --> 00:46:57,760
there's absolutely no effect on lifespan

1232
00:47:01,430 --> 00:46:59,440
whatsoever

1233
00:47:03,109 --> 00:47:01,440
with one exception and that was catalase

1234
00:47:04,790 --> 00:47:03,119
expression in the heart and that turns

1235
00:47:05,910 --> 00:47:04,800
out to be artificial

1236
00:47:08,309 --> 00:47:05,920
so

1237
00:47:10,230 --> 00:47:08,319
the evidence in favor of the idea that

1238
00:47:12,390 --> 00:47:10,240

we age because of free radical and

1239

00:47:14,230 --> 00:47:12,400

oxidative damage

1240

00:47:16,550 --> 00:47:14,240

just really isn't there

1241

00:47:18,309 --> 00:47:16,560

but of course you can always point to

1242

00:47:19,349 --> 00:47:18,319

specific cases in which there's a

1243

00:47:20,150 --> 00:47:19,359

benefit

1244

00:47:21,990 --> 00:47:20,160

so

1245

00:47:24,549 --> 00:47:22,000

i advocate you know

1246

00:47:27,510 --> 00:47:24,559

taking multivitamins taking vitamin c

1247

00:47:28,950 --> 00:47:27,520

vitamin d vitamin e

1248

00:47:31,270 --> 00:47:28,960

all these things are good and they do

1249

00:47:34,069 --> 00:47:31,280

have antioxidant properties

1250

00:47:35,990 --> 00:47:34,079

but the irony the deep irony that has

1251
00:47:37,430 --> 00:47:36,000
finally emerged after decades of people

1252
00:47:40,069 --> 00:47:37,440
thinking about this

1253
00:47:43,990 --> 00:47:40,079
is that the true cause of aging is too

1254
00:47:45,910 --> 00:47:44,000
little oxidation not too much oxidation

1255
00:47:48,630 --> 00:47:45,920
and this came out of david sinclair's

1256
00:47:50,230 --> 00:47:48,640
lab when he discovered that a major

1257
00:47:52,630 --> 00:47:50,240
driver of aging

1258
00:47:55,589 --> 00:47:52,640
is a molecule called nad

1259
00:47:57,910 --> 00:47:55,599
and nad uh exists in every cell in your

1260
00:48:01,270 --> 00:47:57,920
body including your red blood cells

1261
00:48:03,349 --> 00:48:01,280
uh and without nad we'd all die in

1262
00:48:08,549 --> 00:48:03,359
probably several seconds

1263
00:48:10,950 --> 00:48:08,559

uh and what nid is is it's an oxidant

1264

00:48:15,510 --> 00:48:10,960

and it has a partner nadh which is a

1265

00:48:18,230 --> 00:48:15,520

reductant so nad and nadh are a pair uh

1266

00:48:20,150 --> 00:48:18,240

and nadh gives you

1267

00:48:22,630 --> 00:48:20,160

reducing equivalence to help you make

1268

00:48:24,710 --> 00:48:22,640

things like proteins and other things

1269

00:48:27,270 --> 00:48:24,720

uh but without the flip side of that

1270

00:48:28,069 --> 00:48:27,280

coin the oxidized oxidizing side of that

1271

00:48:31,430 --> 00:48:28,079

coin

1272

00:48:34,470 --> 00:48:31,440

uh you would die and as a matter of fact

1273

00:48:35,910 --> 00:48:34,480

it's the reduction in nad with age that

1274

00:48:37,430 --> 00:48:35,920

probably drives a great deal of the

1275

00:48:39,750 --> 00:48:37,440

aging process

1276

00:48:41,589 --> 00:48:39,760

and so uh you know the really

1277

00:48:44,230 --> 00:48:41,599

interesting thing to do nowadays is to

1278

00:48:46,069 --> 00:48:44,240

figure out how to raise your nad level

1279

00:48:47,829 --> 00:48:46,079

so that you can come into better balance

1280

00:48:49,190 --> 00:48:47,839

and and sort of reverse your aging

1281

00:48:51,109 --> 00:48:49,200

programs

1282

00:48:52,150 --> 00:48:51,119

so you know short short answer the

1283

00:48:53,109 --> 00:48:52,160

question is

1284

00:48:55,109 --> 00:48:53,119

uh

1285

00:48:58,150 --> 00:48:55,119

the the big part of the story is you

1286

00:49:00,309 --> 00:48:58,160

need more oxidation not less

1287

00:49:02,710 --> 00:49:00,319

i've got nothing whatsoever to add to

1288

00:49:03,750 --> 00:49:02,720

that but one thing i like to say that's

1289

00:49:05,589 --> 00:49:03,760

a part

1290

00:49:08,150 --> 00:49:05,599

part of our trial is that

1291

00:49:10,230 --> 00:49:08,160

we're still in the era of generalized

1292

00:49:12,630 --> 00:49:10,240

medicine you know take multivitamins do

1293

00:49:14,470 --> 00:49:12,640

this and we're soon going into we

1294

00:49:16,390 --> 00:49:14,480

already see a lot of efforts of much

1295

00:49:18,630 --> 00:49:16,400

more personalized medicine

1296

00:49:21,430 --> 00:49:18,640

and one of the really important benefits

1297

00:49:22,710 --> 00:49:21,440

that i get as a as a patient or as a

1298

00:49:25,190 --> 00:49:22,720

participant

1299

00:49:27,990 --> 00:49:25,200

in the two trim trials so far

1300

00:49:30,069 --> 00:49:28,000

is greg's you know imagine if you have

1301
00:49:30,870 --> 00:49:30,079
the best doctor you've ever had in your

1302
00:49:34,230 --> 00:49:30,880
life

1303
00:49:36,069 --> 00:49:34,240
who pays more attention to you than any

1304
00:49:39,510 --> 00:49:36,079
doctor ever has

1305
00:49:42,230 --> 00:49:39,520
by the in the form of voluminous emails

1306
00:49:44,390 --> 00:49:42,240
and not in service of eradicating

1307
00:49:47,349 --> 00:49:44,400
whatever complaint you have

1308
00:49:49,589 --> 00:49:47,359
but of radically increasing your life

1309
00:49:51,589 --> 00:49:49,599
and checking i don't know how many blood

1310
00:49:52,870 --> 00:49:51,599
tests i've done in the last 12 months 13

1311
00:49:54,390 --> 00:49:52,880
14 or so

1312
00:49:56,230 --> 00:49:54,400
uh so you're

1313
00:49:59,030 --> 00:49:56,240

monitored all the time for your

1314

00:50:00,549 --> 00:49:59,040

individual characteristics and then each

1315

00:50:02,950 --> 00:50:00,559

part of our

1316

00:50:05,910 --> 00:50:02,960

treatment regimen is carefully

1317

00:50:06,950 --> 00:50:05,920

calibrated so you really feel like

1318

00:50:08,790 --> 00:50:06,960

you've got

1319

00:50:10,230 --> 00:50:08,800

one of the best medical minds in your

1320

00:50:12,230 --> 00:50:10,240

corner spending

1321

00:50:15,109 --> 00:50:12,240

much more time on your case to really

1322

00:50:17,109 --> 00:50:15,119

help your health and i think in general

1323

00:50:19,750 --> 00:50:17,119

we're moving more towards that with much

1324

00:50:21,990 --> 00:50:19,760

better diagnostics of the microbiome and

1325

00:50:24,630 --> 00:50:22,000

other markers in your body so that we

1326

00:50:28,470 --> 00:50:24,640

will know how much vitamin d do you need

1327

00:50:31,109 --> 00:50:28,480

vitamin k nad etc and that will be a big

1328

00:50:34,549 --> 00:50:31,119

boost in health for everybody

1329

00:50:35,990 --> 00:50:34,559

do they do they study centenarians

1330

00:50:38,470 --> 00:50:36,000

you know they always say you know it's

1331

00:50:40,630 --> 00:50:38,480

people uh that they'll say oh it's

1332

00:50:42,710 --> 00:50:40,640

longevity is in the genes

1333

00:50:46,069 --> 00:50:42,720

you know it i don't know i mean that's

1334

00:50:48,150 --> 00:50:46,079

what you hear people say um but yeah

1335

00:50:50,710 --> 00:50:48,160

yeah there are there are various

1336

00:50:53,109 --> 00:50:50,720

individuals that study centenarians

1337

00:50:55,910 --> 00:50:53,119

uh we've learned a lot about aging uh

1338

00:50:57,990 --> 00:50:55,920

from studying centenarians

1339

00:50:59,750 --> 00:50:58,000

we find that centenarians are different

1340

00:51:00,950 --> 00:50:59,760

kinds of people

1341

00:51:02,549 --> 00:51:00,960

they just

1342

00:51:05,030 --> 00:51:02,559

they don't get sick

1343

00:51:07,349 --> 00:51:05,040

or some of them get sick but it doesn't

1344

00:51:10,230 --> 00:51:07,359

affect their longevity they just deal

1345

00:51:11,589 --> 00:51:10,240

with it they just handle it uh

1346

00:51:14,309 --> 00:51:11,599

and you know

1347

00:51:16,870 --> 00:51:14,319

their offspring show similar features so

1348

00:51:18,790 --> 00:51:16,880

when they get married and they have kids

1349

00:51:20,790 --> 00:51:18,800

some of their kids inherit their jeans

1350

00:51:23,990 --> 00:51:20,800

and those kids seem to do better than

1351
00:51:25,349 --> 00:51:24,000
the average 80 year olds of the same age

1352
00:51:26,790 --> 00:51:25,359
as the is the offspring of the

1353
00:51:30,230 --> 00:51:26,800
centenarians

1354
00:51:32,470 --> 00:51:30,240
so

1355
00:51:35,190 --> 00:51:32,480
i think what these people teach us is

1356
00:51:38,390 --> 00:51:35,200
that there are biological tricks that

1357
00:51:40,069 --> 00:51:38,400
can deal with aging to a large extent

1358
00:51:42,230 --> 00:51:40,079
of course not to the point of

1359
00:51:44,390 --> 00:51:42,240
immortality but certainly much better

1360
00:51:46,390 --> 00:51:44,400
than the average population so the more

1361
00:51:48,150 --> 00:51:46,400
we learn from them uh the better we'll

1362
00:51:50,870 --> 00:51:48,160
be able to handle aging

1363
00:51:52,390 --> 00:51:50,880

for ourselves as well

1364

00:51:54,870 --> 00:51:52,400

all fascinating this is all very

1365

00:51:57,030 --> 00:51:54,880

fascinating someone wanted uh john

1366

00:52:00,870 --> 00:51:57,040

wanted me to ask you about the use of

1367

00:52:03,430 --> 00:52:00,880

hyperbaric oxygen chambers

1368

00:52:05,990 --> 00:52:03,440

yeah so uh well i find these very

1369

00:52:07,990 --> 00:52:06,000

interesting and uh there's actually one

1370

00:52:09,589 --> 00:52:08,000

not too far from where i'm located in

1371

00:52:12,710 --> 00:52:09,599

southern california

1372

00:52:13,670 --> 00:52:12,720

and i do plan to uh pay a visit to that

1373

00:52:15,750 --> 00:52:13,680

uh

1374

00:52:18,230 --> 00:52:15,760

so i have a theory about hyperbaric

1375

00:52:21,030 --> 00:52:18,240

oxygenation so there was a there was a

1376

00:52:23,270 --> 00:52:21,040

story recently that came out of

1377

00:52:25,349 --> 00:52:23,280

israel

1378

00:52:26,630 --> 00:52:25,359

because they claimed that they were able

1379

00:52:29,510 --> 00:52:26,640

to

1380

00:52:31,750 --> 00:52:29,520

make cells younger by putting people

1381

00:52:33,910 --> 00:52:31,760

into a hyperbaric oxygen table

1382

00:52:35,670 --> 00:52:33,920

and what they were referring to is

1383

00:52:38,470 --> 00:52:35,680

that they made measurements

1384

00:52:39,910 --> 00:52:38,480

that indicated that the telomeres were

1385

00:52:42,870 --> 00:52:39,920

longer in the people that went in the

1386

00:52:44,870 --> 00:52:42,880

hyperbaric chamber

1387

00:52:46,950 --> 00:52:44,880

that was refuted by

1388

00:52:48,950 --> 00:52:46,960

bill andrews who's uh

1389

00:52:50,549 --> 00:52:48,960

probably the world's leading expert on

1390

00:52:51,349 --> 00:52:50,559

telomeres these days

1391

00:52:53,829 --> 00:52:51,359

uh

1392

00:52:55,430 --> 00:52:53,839

what he said is that it's been it's been

1393

00:52:57,829 --> 00:52:55,440

shown for a long time that hyperbaric

1394

00:52:59,990 --> 00:52:57,839

oxygenation will kill

1395

00:53:02,069 --> 00:53:00,000

uh senescent cells cells that have short

1396

00:53:03,589 --> 00:53:02,079

telomers and of course that means that

1397

00:53:05,430 --> 00:53:03,599

the cells that are not killed have

1398

00:53:07,270 --> 00:53:05,440

longer telomeres so when you measure

1399

00:53:09,190 --> 00:53:07,280

telomere length it looks like they

1400

00:53:10,150 --> 00:53:09,200

actually increased but they actually did

1401
00:53:13,510 --> 00:53:10,160
not

1402
00:53:14,870 --> 00:53:13,520
so there has been some hype about

1403
00:53:15,990 --> 00:53:14,880
these chambers recently and i believe

1404
00:53:18,069 --> 00:53:16,000
there's been

1405
00:53:20,309 --> 00:53:18,079
more uh that has come out since that

1406
00:53:23,109 --> 00:53:20,319
initial study and i have to confess i'm

1407
00:53:26,309 --> 00:53:23,119
not uh totally up to speed on all of it

1408
00:53:28,630 --> 00:53:26,319
but uh my theory about it is that

1409
00:53:31,510 --> 00:53:28,640
it offers some really interesting

1410
00:53:33,990 --> 00:53:31,520
potential for reversing aging

1411
00:53:36,390 --> 00:53:34,000
because what does it do if you go into a

1412
00:53:39,750 --> 00:53:36,400
hyperbaric oxygen chamber you're getting

1413
00:53:41,270 --> 00:53:39,760

more oxygen and what is oxygen oxygen is

1414

00:53:43,750 --> 00:53:41,280

an oxidant

1415

00:53:45,190 --> 00:53:43,760

and so it's going to convert your nadh

1416

00:53:45,990 --> 00:53:45,200

into nad

1417

00:53:53,829 --> 00:53:46,000

and

1418

00:53:55,910 --> 00:53:53,839

others that if nad goes up you should

1419

00:53:57,910 --> 00:53:55,920

get younger so this is one of the things

1420

00:53:59,589 --> 00:53:57,920

that i would like to test we can

1421

00:54:01,750 --> 00:53:59,599

actually measure aging now with these

1422

00:54:04,230 --> 00:54:01,760

epigenetic aging clocks

1423

00:54:06,230 --> 00:54:04,240

and we think one reason that our trial

1424

00:54:07,589 --> 00:54:06,240

showed aging reversal and people like

1425

00:54:09,030 --> 00:54:07,599

paul

1426

00:54:11,030 --> 00:54:09,040

is because

1427

00:54:13,109 --> 00:54:11,040

our treatment through immune

1428

00:54:15,829 --> 00:54:13,119

immunological mechanisms rather than

1429

00:54:18,470 --> 00:54:15,839

hyperbaric oxygenation mechanisms had

1430

00:54:20,549 --> 00:54:18,480

the same effect of increasing nad in the

1431

00:54:22,549 --> 00:54:20,559

body stores

1432

00:54:24,230 --> 00:54:22,559

what would happen if we could combine

1433

00:54:26,549 --> 00:54:24,240

that immunological mechanism with

1434

00:54:28,950 --> 00:54:26,559

another mechanism like hyperbaric

1435

00:54:30,870 --> 00:54:28,960

oxygenation it could be very exciting

1436

00:54:33,030 --> 00:54:30,880

so far as far as i know nobody has

1437

00:54:35,510 --> 00:54:33,040

pursued that idea or even thought of it

1438

00:54:36,870 --> 00:54:35,520

other than myself but

1439

00:54:39,109 --> 00:54:36,880

it's something that

1440

00:54:40,630 --> 00:54:39,119

we will learn more about as time goes

1441

00:54:42,870 --> 00:54:40,640

goes on

1442

00:54:44,870 --> 00:54:42,880

there's a another sort of home technique

1443

00:54:47,190 --> 00:54:44,880

for oxidation that i've i've come across

1444

00:54:49,109 --> 00:54:47,200

and run by greg who didn't pooh-pooh it

1445

00:54:50,390 --> 00:54:49,119

which is that you know we talk about

1446

00:54:52,390 --> 00:54:50,400

like breathing and how you need to

1447

00:54:54,549 --> 00:54:52,400

breathe a lot to get oxygen

1448

00:54:55,510 --> 00:54:54,559

but part of that process is that you

1449

00:54:58,470 --> 00:54:55,520

have to

1450

00:55:01,510 --> 00:54:58,480

get rid of the co2 and that for some

1451
00:55:04,309 --> 00:55:01,520
people breathing in too much oxygen too

1452
00:55:06,470 --> 00:55:04,319
fast can actually the process of

1453
00:55:09,510 --> 00:55:06,480
getting rid of the co2 so you

1454
00:55:10,630 --> 00:55:09,520
functionally have less less oxygen so

1455
00:55:13,349 --> 00:55:10,640
you know if you have the thought

1456
00:55:15,670 --> 00:55:13,359
experiment if you have a very overweight

1457
00:55:17,670 --> 00:55:15,680
person and an athlete and they run up a

1458
00:55:19,829 --> 00:55:17,680
couple flights of stairs what do you

1459
00:55:21,750 --> 00:55:19,839
expect them each to be like the one that

1460
00:55:24,390 --> 00:55:21,760
is very overweight you're thinking that

1461
00:55:28,150 --> 00:55:24,400
he's huffing and puffing but the athlete

1462
00:55:30,150 --> 00:55:28,160
who's finely tuned needs less oxygen so

1463
00:55:31,910 --> 00:55:30,160

it's no question that you need more

1464

00:55:34,390 --> 00:55:31,920

oxidation in the body

1465

00:55:37,510 --> 00:55:34,400

but because of the two-way circuit

1466

00:55:40,069 --> 00:55:37,520

it may be that a more regulated flow of

1467

00:55:41,910 --> 00:55:40,079

oxygen in the first place

1468

00:55:44,069 --> 00:55:41,920

may help actually with the overall

1469

00:55:45,829 --> 00:55:44,079

process

1470

00:55:47,030 --> 00:55:45,839

that's actually kind of interesting and

1471

00:55:49,990 --> 00:55:47,040

you know uh

1472

00:55:52,870 --> 00:55:50,000

depleting carbon dioxide levels too much

1473

00:55:56,870 --> 00:55:52,880

uh can actually cause vasoconstriction

1474

00:55:59,270 --> 00:55:56,880

in the brain so uh yeah as usual there

1475

00:56:01,750 --> 00:55:59,280

are complexities involved in everything

1476

00:56:04,069 --> 00:56:01,760

including this

1477

00:56:05,750 --> 00:56:04,079

there's some questions coming up on chat

1478

00:56:07,270 --> 00:56:05,760

and i can actually take calls a little

1479

00:56:09,510 --> 00:56:07,280

bit but um

1480

00:56:13,829 --> 00:56:09,520

i like this one in particular because

1481

00:56:19,349 --> 00:56:16,630

is there any anything i i know this is

1482

00:56:21,349 --> 00:56:19,359

probably totally separate but this uh

1483

00:56:23,589 --> 00:56:21,359

this iris saying how can i prevent my

1484

00:56:25,990 --> 00:56:23,599

hair from becoming gray i think that's a

1485

00:56:28,390 --> 00:56:26,000

great question um because that must be a

1486

00:56:30,950 --> 00:56:28,400

chemical change in your body that makes

1487

00:56:32,230 --> 00:56:30,960

something like this happen

1488

00:56:34,710 --> 00:56:32,240

well um

1489

00:56:37,349 --> 00:56:34,720

one thing that can cause hair to become

1490

00:56:39,109 --> 00:56:37,359

gray is a copper deficiency

1491

00:56:41,990 --> 00:56:39,119

so make sure you're not deficient in

1492

00:56:44,230 --> 00:56:42,000

copper that may help

1493

00:56:45,510 --> 00:56:44,240

another interesting observation of our

1494

00:56:49,030 --> 00:56:45,520

own study

1495

00:56:51,109 --> 00:56:49,040

in trim uh was that a couple of the guys

1496

00:56:53,510 --> 00:56:51,119

had their hair which was previously

1497

00:56:55,430 --> 00:56:53,520

white start growing in dark again

1498

00:56:56,390 --> 00:56:55,440

uh

1499

00:56:58,470 --> 00:56:56,400

yeah

1500

00:57:00,230 --> 00:56:58,480

there may be something about uh our

1501
00:57:01,109 --> 00:57:00,240
treatment that helps with that

1502
00:57:03,589 --> 00:57:01,119
wow

1503
00:57:05,750 --> 00:57:03,599
my brother was also in the initial trim

1504
00:57:09,109 --> 00:57:05,760
trial and is in this trial as well which

1505
00:57:10,710 --> 00:57:09,119
just ended and he uh felt that his hair

1506
00:57:12,470 --> 00:57:10,720
did get darker during the trial and his

1507
00:57:14,789 --> 00:57:12,480
wife uh confirmed it

1508
00:57:16,950 --> 00:57:14,799
wow yeah do we have some photographs

1509
00:57:18,950 --> 00:57:16,960
that we can pull together uh to prove

1510
00:57:21,990 --> 00:57:18,960
that paul yeah you think

1511
00:57:23,990 --> 00:57:22,000
i don't know if you can do it now

1512
00:57:26,630 --> 00:57:24,000
all you have to do is email them to me

1513
00:57:28,150 --> 00:57:26,640

if you haven't paul but um

1514

00:57:29,510 --> 00:57:28,160

one of the things i you do have to say

1515

00:57:30,950 --> 00:57:29,520

though too people have to be careful

1516

00:57:33,270 --> 00:57:30,960

about copper you can take too much

1517

00:57:35,910 --> 00:57:33,280

copper too and that can be sure very

1518

00:57:37,750 --> 00:57:35,920

careful that can be very bad yeah

1519

00:57:39,670 --> 00:57:37,760

yeah i'm glad you pointed that out i'm

1520

00:57:41,589 --> 00:57:39,680

glad you pointed that out yeah i hate

1521

00:57:42,630 --> 00:57:41,599

the idea of taking copper but i've had

1522

00:57:44,470 --> 00:57:42,640

to have a

1523

00:57:47,349 --> 00:57:44,480

another look at it lately because it

1524

00:57:49,109 --> 00:57:47,359

does have a lot of benefits so um

1525

00:57:51,109 --> 00:57:49,119

it's uh it's

1526
00:57:52,870 --> 00:57:51,119
it's something not to neglect yeah you

1527
00:57:55,030 --> 00:57:52,880
just have to take this the right amount

1528
00:57:57,190 --> 00:57:55,040
i love this question by the way just to

1529
00:58:00,230 --> 00:57:57,200
clarify that so what i understand is

1530
00:58:02,069 --> 00:58:00,240
that uh you get into trouble with 10

1531
00:58:05,990 --> 00:58:02,079
milligrams and above

1532
00:58:08,069 --> 00:58:06,000
but for perspective a normal day's

1533
00:58:09,990 --> 00:58:08,079
food intake will give you about 0.9

1534
00:58:11,910 --> 00:58:10,000
milligrams so

1535
00:58:13,910 --> 00:58:11,920
you have to eat about 10 times the the

1536
00:58:15,190 --> 00:58:13,920
normal intake before you start getting

1537
00:58:17,030 --> 00:58:15,200
into trouble

1538
00:58:18,710 --> 00:58:17,040

and i wouldn't recommend getting

1539

00:58:20,150 --> 00:58:18,720

anywhere near 10

1540

00:58:22,710 --> 00:58:20,160

but you know if you took a couple

1541

00:58:24,549 --> 00:58:22,720

milligrams a day or every other day you

1542

00:58:27,030 --> 00:58:24,559

ought to be safe

1543

00:58:28,710 --> 00:58:27,040

will it regrow hair too

1544

00:58:31,109 --> 00:58:28,720

well i don't know about that i don't

1545

00:58:33,190 --> 00:58:31,119

know about that but we have there are

1546

00:58:34,630 --> 00:58:33,200

drugs like rogain that allegedly can

1547

00:58:37,510 --> 00:58:34,640

regrow hair

1548

00:58:39,430 --> 00:58:37,520

um yeah i know i'm just i'm just kind of

1549

00:58:40,950 --> 00:58:39,440

messing around here

1550

00:58:42,710 --> 00:58:40,960

paul do you

1551

00:58:45,589 --> 00:58:42,720

this is a great question

1552

00:58:47,510 --> 00:58:45,599

we know you test about at this point

1553

00:58:50,630 --> 00:58:47,520

about 10 years younger

1554

00:58:52,230 --> 00:58:50,640

do you feel younger

1555

00:58:53,270 --> 00:58:52,240

ah so

1556

00:58:55,109 --> 00:58:53,280

when we

1557

00:58:57,990 --> 00:58:55,119

kicked off the initial

1558

00:59:01,670 --> 00:58:58,000

trim trial at stanford

1559

00:59:04,230 --> 00:59:01,680

um it felt like a grand experiment and i

1560

00:59:06,230 --> 00:59:04,240

dubbed us the thyme knots and we're all

1561

00:59:08,630 --> 00:59:06,240

very excited because it was such an

1562

00:59:10,789 --> 00:59:08,640

impeccable presentation that greg put

1563

00:59:13,430 --> 00:59:10,799

together you know one of the

1564

00:59:15,109 --> 00:59:13,440

questions i had was okay you've shown a

1565

00:59:17,670 --> 00:59:15,119

very strong research base that the

1566

00:59:20,630 --> 00:59:17,680

thymus can be regenerated but how will

1567

00:59:22,789 --> 00:59:20,640

the overall signal pathway function

1568

00:59:24,549 --> 00:59:22,799

for the first time in history the thymus

1569

00:59:26,630 --> 00:59:24,559

is back online will the rest of the

1570

00:59:28,789 --> 00:59:26,640

components know and say hey guys the

1571

00:59:30,950 --> 00:59:28,799

thymus is back online let's go and it

1572

00:59:32,789 --> 00:59:30,960

turns out that it is the case so we're

1573

00:59:35,589 --> 00:59:32,799

all very excited when greg answered all

1574

00:59:38,069 --> 00:59:35,599

these questions and our group was

1575

00:59:40,150 --> 00:59:38,079

emailing everybody and some of the other

1576

00:59:42,950 --> 00:59:40,160

fellows in the experiment were saying i

1577

00:59:46,470 --> 00:59:42,960

feel like i was like i'm 18 again this

1578

00:59:49,670 --> 00:59:46,480

is fantastic and i sheepishly emailed to

1579

00:59:51,829 --> 00:59:49,680

greg saying uh greg i really don't feel

1580

00:59:52,789 --> 00:59:51,839

any different i don't know if this is

1581

00:59:54,789 --> 00:59:52,799

working

1582

00:59:56,789 --> 00:59:54,799

and greg emailed me back and he said

1583

00:59:58,630 --> 00:59:56,799

well you're in pretty good health poll

1584

01:00:01,990 --> 00:59:58,640

so you're probably not going to feel

1585

01:00:03,510 --> 01:00:02,000

much different and indeed i really

1586

01:00:05,430 --> 01:00:03,520

haven't felt it's not really so much

1587

01:00:07,109 --> 01:00:05,440

about vim and vigor it's about not

1588

01:00:08,150 --> 01:00:07,119

getting sick and sort of internal

1589

01:00:10,789 --> 01:00:08,160

components

1590

01:00:11,589 --> 01:00:10,799

so as i mentioned before it's it's hard

1591

01:00:13,829 --> 01:00:11,599

to

1592

01:00:15,750 --> 01:00:13,839

pinpoint cause and effect when you're

1593

01:00:18,549 --> 01:00:15,760

doing a lot of things for your health

1594

01:00:21,190 --> 01:00:18,559

but i really don't feel different i feel

1595

01:00:23,109 --> 01:00:21,200

less sick i don't get sick very much

1596

01:00:25,190 --> 01:00:23,119

uh but um

1597

01:00:27,589 --> 01:00:25,200

i don't i can't say that i

1598

01:00:31,270 --> 01:00:27,599

feel a lot different which is not really

1599

01:00:33,910 --> 01:00:31,280

the the the primary thrust but um

1600

01:00:36,549 --> 01:00:33,920

but in a in a way in a way it is paul

1601
01:00:39,430 --> 01:00:36,559
because if you had not been maintaining

1602
01:00:42,470 --> 01:00:39,440
the same age uh or or less

1603
01:00:44,870 --> 01:00:42,480
for the last five years you might feel

1604
01:00:46,069 --> 01:00:44,880
worse yeah there you go yeah so it's

1605
01:00:48,549 --> 01:00:46,079
it's not just a matter of whether you

1606
01:00:51,510 --> 01:00:48,559
feel better but not feeling worse is

1607
01:00:52,789 --> 01:00:51,520
uh pretty positive as well

1608
01:00:55,190 --> 01:00:52,799
yeah wow

1609
01:00:56,710 --> 01:00:55,200
yeah that that's uh yeah you you may

1610
01:00:59,109 --> 01:00:56,720
have been really sick right now if you

1611
01:01:00,150 --> 01:00:59,119
didn't do any of that so speaking of

1612
01:01:01,910 --> 01:01:00,160
health

1613
01:01:03,670 --> 01:01:01,920

what kind of if someone wants to get

1614

01:01:05,829 --> 01:01:03,680

into your trial and and one of the

1615

01:01:07,829 --> 01:01:05,839

questions i keep forgetting to ask what

1616

01:01:10,309 --> 01:01:07,839

is t-r-i-i-m

1617

01:01:11,750 --> 01:01:10,319

hold that question first i want to know

1618

01:01:13,190 --> 01:01:11,760

what type of

1619

01:01:15,030 --> 01:01:13,200

um

1620

01:01:16,150 --> 01:01:15,040

what type of person can get into your

1621

01:01:16,870 --> 01:01:16,160

trials

1622

01:01:18,710 --> 01:01:16,880

and

1623

01:01:20,150 --> 01:01:18,720

how what type of physical shape do they

1624

01:01:21,589 --> 01:01:20,160

need to be in and what type of testing

1625

01:01:23,670 --> 01:01:21,599

do they have to have

1626

01:01:26,309 --> 01:01:23,680

sure before i answer that question i'll

1627

01:01:28,549 --> 01:01:26,319

just note uh parenthetically that

1628

01:01:31,270 --> 01:01:28,559

my cell phone tells me that it's near

1629

01:01:33,829 --> 01:01:31,280

the end of its battery life here i'm not

1630

01:01:39,910 --> 01:01:36,829

for a discussion on

1631

01:01:42,390 --> 01:01:39,920

extension yeah yeah i need to extend the

1632

01:01:44,630 --> 01:01:42,400

battery life your battery life yeah you

1633

01:01:48,789 --> 01:01:44,640

need to uh you need to put that in the

1634

01:01:54,150 --> 01:01:50,870

whatever time i have available here so

1635

01:01:56,230 --> 01:01:54,160

um trim stands for thymus regeneration

1636

01:01:57,589 --> 01:01:56,240

immuno restoration and insulin

1637

01:01:59,430 --> 01:01:57,599

mitigation

1638

01:02:01,910 --> 01:01:59,440

so the purpose of the trials was to

1639

01:02:04,150 --> 01:02:01,920

regrow the thymus and restore immune

1640

01:02:06,390 --> 01:02:04,160

system function without elevating

1641

01:02:09,109 --> 01:02:06,400

insulin because insulin goes up with

1642

01:02:10,630 --> 01:02:09,119

aging and it's a pro aging factor it's a

1643

01:02:12,470 --> 01:02:10,640

side effect of growth hormone so we

1644

01:02:15,670 --> 01:02:12,480

wanted to block that

1645

01:02:17,190 --> 01:02:15,680

so the uh answer to the second question

1646

01:02:18,230 --> 01:02:17,200

which is what does it take to get into

1647

01:02:20,150 --> 01:02:18,240

the trial

1648

01:02:22,069 --> 01:02:20,160

you have to be generally reasonably

1649

01:02:24,069 --> 01:02:22,079

healthy uh if you're gonna die of a

1650

01:02:25,750 --> 01:02:24,079

heart attack in five minutes it's

1651

01:02:27,430 --> 01:02:25,760

useless for us to put you in the trial

1652

01:02:28,789 --> 01:02:27,440

because you're gonna make us look bad

1653

01:02:30,630 --> 01:02:28,799

and we're not gonna learn anything from

1654

01:02:34,150 --> 01:02:30,640

you because you won't finish it

1655

01:02:36,789 --> 01:02:34,160

uh but if you're in reasonable condition

1656

01:02:39,190 --> 01:02:36,799

then you can get in

1657

01:02:40,309 --> 01:02:39,200

the the main exclusion is

1658

01:02:42,549 --> 01:02:40,319

having a

1659

01:02:43,990 --> 01:02:42,559

high risk of cancer because we're giving

1660

01:02:46,309 --> 01:02:44,000

you a bunch of growth

1661

01:02:47,990 --> 01:02:46,319

factors and if you have cancer already

1662

01:02:49,349 --> 01:02:48,000

we don't want to make it worse by making

1663

01:02:52,069 --> 01:02:49,359

it grow fast

1664

01:02:53,270 --> 01:02:52,079

so if you're if you have ever had cancer

1665

01:02:56,150 --> 01:02:53,280

in the past

1666

01:02:59,029 --> 01:02:56,160

we we actually can make exceptions if

1667

01:03:01,510 --> 01:02:59,039

you've had sun induced skin cancer only

1668

01:03:03,190 --> 01:03:01,520

that has been removed you know a few

1669

01:03:05,349 --> 01:03:03,200

years ago and you haven't had any

1670

01:03:07,910 --> 01:03:05,359

recurrence that's not something we we

1671

01:03:09,829 --> 01:03:07,920

consider to be an actual intrinsic

1672

01:03:11,750 --> 01:03:09,839

cancer risk that you have but if you're

1673

01:03:14,230 --> 01:03:11,760

genetically predisposed to develop

1674

01:03:17,270 --> 01:03:14,240

cancer or if everyone in your family has

1675

01:03:18,950 --> 01:03:17,280

died of cancer uh or if you've had you

1676
01:03:20,470 --> 01:03:18,960
know cancer several times in the past

1677
01:03:22,549 --> 01:03:20,480
and it's not just skin cancer it's

1678
01:03:24,710 --> 01:03:22,559
something more serious we're just not

1679
01:03:26,789 --> 01:03:24,720
going to take the risk on you we don't

1680
01:03:27,750 --> 01:03:26,799
want to do any harm to anybody in the

1681
01:03:28,870 --> 01:03:27,760
trial

1682
01:03:31,829 --> 01:03:28,880
um

1683
01:03:34,150 --> 01:03:31,839
the fda has prevented us from enrolling

1684
01:03:36,230 --> 01:03:34,160
people who have type 2 diabetes

1685
01:03:38,549 --> 01:03:36,240
uh and that's reasonable because we're

1686
01:03:40,390 --> 01:03:38,559
going to make you more like a type 2

1687
01:03:42,069 --> 01:03:40,400
diabetic and if you're already a type 2

1688
01:03:45,190 --> 01:03:42,079

but diabetic it's going to be harder for

1689

01:03:46,630 --> 01:03:45,200

us to overcome that uh and so uh we

1690

01:03:48,390 --> 01:03:46,640

can't let you in

1691

01:03:50,549 --> 01:03:48,400

uh but

1692

01:03:52,470 --> 01:03:50,559

pardon me what about type one

1693

01:03:54,470 --> 01:03:52,480

type one uh

1694

01:03:56,470 --> 01:03:54,480

is theoretically okay

1695

01:03:59,430 --> 01:03:56,480

it's theoretically okay because you can

1696

01:04:00,549 --> 01:03:59,440

be controlled on type one i see

1697

01:04:02,710 --> 01:04:00,559

interesting

1698

01:04:04,390 --> 01:04:02,720

yeah so i kind of interrupted you there

1699

01:04:06,789 --> 01:04:04,400

if you want to keep one of the things

1700

01:04:08,230 --> 01:04:06,799

martin to mention is that um you know

1701
01:04:10,390 --> 01:04:08,240
people can come to the website i'm now

1702
01:04:12,549 --> 01:04:10,400
the cfo of the company uh working with

1703
01:04:15,349 --> 01:04:12,559
greg and bobby our ceo

1704
01:04:16,789 --> 01:04:15,359
um you know it's intervene immune.com

1705
01:04:18,870 --> 01:04:16,799
where they can learn more information

1706
01:04:20,069 --> 01:04:18,880
and see steve horvath also who you

1707
01:04:21,670 --> 01:04:20,079
mentioned

1708
01:04:23,990 --> 01:04:21,680
one of the things it's it's not

1709
01:04:26,789 --> 01:04:24,000
something to do lightly

1710
01:04:28,789 --> 01:04:26,799
i think it's overwhelmingly positive and

1711
01:04:31,349 --> 01:04:28,799
greg knows i'm the biggest poster boy

1712
01:04:33,430 --> 01:04:31,359
there is for this but it is a commitment

1713
01:04:36,230 --> 01:04:33,440

because it is to really do it right it's

1714

01:04:38,630 --> 01:04:36,240

a year-long program where you

1715

01:04:40,309 --> 01:04:38,640

not you know no major life changes but

1716

01:04:42,549 --> 01:04:40,319

you have to be conscientious about the

1717

01:04:44,069 --> 01:04:42,559

program so it's not just like adding a

1718

01:04:45,349 --> 01:04:44,079

new supplement every morning it's a bit

1719

01:04:46,950 --> 01:04:45,359

more involved

1720

01:04:48,549 --> 01:04:46,960

but it's

1721

01:04:50,069 --> 01:04:48,559

like like i mentioned you have the

1722

01:04:51,750 --> 01:04:50,079

benefit of having

1723

01:04:52,710 --> 01:04:51,760

one of the best medical minds in the

1724

01:04:55,190 --> 01:04:52,720

world

1725

01:04:58,710 --> 01:04:55,200

dissect your case with csi like

1726

01:05:01,589 --> 01:04:58,720

precision and give you the road map to

1727

01:05:03,430 --> 01:05:01,599

lifetime escape velocity

1728

01:05:05,670 --> 01:05:03,440

yeah yeah it does take commitment you

1729

01:05:08,390 --> 01:05:05,680

have to inject yourself with uh you know

1730

01:05:10,470 --> 01:05:08,400

growth from one four times a week uh you

1731

01:05:13,670 --> 01:05:10,480

have to have certain

1732

01:05:16,630 --> 01:05:13,680

uh meals you know that you standardize

1733

01:05:18,789 --> 01:05:16,640

before you get your blood drawn

1734

01:05:20,150 --> 01:05:18,799

so there are

1735

01:05:21,750 --> 01:05:20,160

certain things you have to do in order

1736

01:05:23,270 --> 01:05:21,760

to be in the trial certain behavioral

1737

01:05:24,870 --> 01:05:23,280

things that you have to be

1738

01:05:27,109 --> 01:05:24,880

in touch with

1739

01:05:28,230 --> 01:05:27,119

but overall you do learn a lot about

1740

01:05:30,470 --> 01:05:28,240

yourself

1741

01:05:32,870 --> 01:05:30,480

and ultimately we will learn a lot about

1742

01:05:34,950 --> 01:05:32,880

how to deal with aging in general so we

1743

01:05:37,589 --> 01:05:34,960

certainly welcome anyone in who's

1744

01:05:39,510 --> 01:05:37,599

interested in this study and it's really

1745

01:05:41,670 --> 01:05:39,520

one of the few things i've come across

1746

01:05:44,069 --> 01:05:41,680

that has demonstrable results and greg i

1747

01:05:46,710 --> 01:05:44,079

mentioned the publication in aging cell

1748

01:05:49,910 --> 01:05:46,720

magazine yeah we've got clear-cut

1749

01:05:52,789 --> 01:05:49,920

results that greg has shown both in that

1750

01:05:54,710 --> 01:05:52,799

article and at numerous conferences

1751

01:05:56,069 --> 01:05:54,720

so what do you see for um we can

1752

01:05:58,230 --> 01:05:56,079

probably just wrap this up while you

1753

01:05:59,190 --> 01:05:58,240

have battery left here so what do you

1754

01:06:00,789 --> 01:05:59,200

see

1755

01:06:03,029 --> 01:06:00,799

for the future

1756

01:06:05,270 --> 01:06:03,039

i mean this is exciting i'd consider

1757

01:06:08,069 --> 01:06:05,280

this being on the ground floor

1758

01:06:10,870 --> 01:06:08,079

uh what do you think's the future i mean

1759

01:06:13,430 --> 01:06:10,880

the way thing we develop the way we um

1760

01:06:15,670 --> 01:06:13,440

you know science changes all the time i

1761

01:06:18,390 --> 01:06:15,680

understand we know so much more about

1762

01:06:20,230 --> 01:06:18,400

the brain than we did just 10 years ago

1763

01:06:23,109 --> 01:06:20,240

you know we've made we make leaps and

1764

01:06:24,230 --> 01:06:23,119

bounds um and i think aging is important

1765

01:06:26,150 --> 01:06:24,240

enough where there's going to be a lot

1766

01:06:28,710 --> 01:06:26,160

of people that are going to want to

1767

01:06:30,710 --> 01:06:28,720

invest a lot of money if it looks

1768

01:06:33,029 --> 01:06:30,720

promising

1769

01:06:35,589 --> 01:06:33,039

yes so there are uh

1770

01:06:38,630 --> 01:06:35,599

many exciting developments coming along

1771

01:06:40,950 --> 01:06:38,640

nad therapy the trim treatment

1772

01:06:41,910 --> 01:06:40,960

uh plasma dilution

1773

01:06:44,230 --> 01:06:41,920

uh

1774

01:06:46,789 --> 01:06:44,240

all kinds of stuff coming along maybe

1775

01:06:48,230 --> 01:06:46,799

hyperbaric oxygenation if that works out

1776

01:06:50,630 --> 01:06:48,240

maybe some of these other things that we

1777

01:06:53,109 --> 01:06:50,640

talked about like

1778

01:06:55,910 --> 01:06:53,119

alpha ketoglutarate who knows about that

1779

01:06:57,430 --> 01:06:55,920

uh we're going to be starting to combine

1780

01:07:00,470 --> 01:06:57,440

these things there's also a treatment

1781

01:07:03,190 --> 01:07:00,480

called e5 or it used to be called elixir

1782

01:07:06,069 --> 01:07:03,200

which has radical anti-aging effects in

1783

01:07:07,829 --> 01:07:06,079

rodents and uh i'm friends with the

1784

01:07:09,910 --> 01:07:07,839

people that are promulgating that and we

1785

01:07:11,510 --> 01:07:09,920

would love to combine our treatment with

1786

01:07:12,549 --> 01:07:11,520

their treatment at some point to see if

1787

01:07:14,630 --> 01:07:12,559

we can

1788

01:07:15,990 --> 01:07:14,640

rejuvenate people even better than we

1789

01:07:18,470 --> 01:07:16,000

already have

1790

01:07:21,109 --> 01:07:18,480

so i i think that the one beautiful

1791

01:07:22,950 --> 01:07:21,119

thing is that also synalytic therapy

1792

01:07:23,910 --> 01:07:22,960

getting rid of these so-called zombie

1793

01:07:26,710 --> 01:07:23,920

cells

1794

01:07:28,710 --> 01:07:26,720

you know in life you know in in

1795

01:07:30,549 --> 01:07:28,720

rodent models if you kill off the zombie

1796

01:07:32,150 --> 01:07:30,559

cells the animals get healthier and live

1797

01:07:34,710 --> 01:07:32,160

40 longer

1798

01:07:36,789 --> 01:07:34,720

so all of these things the beauty of

1799

01:07:39,029 --> 01:07:36,799

them is that they're they're compatible

1800

01:07:41,430 --> 01:07:39,039

with each other none of them are a

1801
01:07:43,349 --> 01:07:41,440
contradiction to any of the others that

1802
01:07:44,870 --> 01:07:43,359
means that they may be additive we may

1803
01:07:45,990 --> 01:07:44,880
be able to do all of these things at the

1804
01:07:48,470 --> 01:07:46,000
same time

1805
01:07:50,950 --> 01:07:48,480
and just really have a totally profound

1806
01:07:52,390 --> 01:07:50,960
effect on aging and and this is not

1807
01:07:53,829 --> 01:07:52,400
something in the distant future i'm

1808
01:07:55,670 --> 01:07:53,839
talking about things that have already

1809
01:07:58,150 --> 01:07:55,680
been seen already been

1810
01:08:00,390 --> 01:07:58,160
learned already been demonstrated

1811
01:08:01,589 --> 01:08:00,400
what has not been done is to see what

1812
01:08:02,789 --> 01:08:01,599
happens when you put these things

1813
01:08:05,589 --> 01:08:02,799

together

1814

01:08:07,349 --> 01:08:05,599

so i'm very very excited about that and

1815

01:08:09,510 --> 01:08:07,359

as i said we're developing new

1816

01:08:11,670 --> 01:08:09,520

diagnostics also so we can investigate

1817

01:08:14,390 --> 01:08:11,680

how well these things work more easily

1818

01:08:15,990 --> 01:08:14,400

more comprehensively and more palpably

1819

01:08:17,590 --> 01:08:16,000

you know in a more

1820

01:08:23,269 --> 01:08:17,600

uh

1821

01:08:25,349 --> 01:08:23,279

the near future is going to be very

1822

01:08:27,910 --> 01:08:25,359

exciting next five or ten years

1823

01:08:28,709 --> 01:08:27,920

uh should really be uh game changing i

1824

01:08:31,349 --> 01:08:28,719

think

1825

01:08:32,950 --> 01:08:31,359

and congratulating my permission can you

1826

01:08:34,070 --> 01:08:32,960

uh for the benefit of the listeners or

1827

01:08:36,070 --> 01:08:34,080

the viewers

1828

01:08:37,990 --> 01:08:36,080

characterize the results i had to make

1829

01:08:39,829 --> 01:08:38,000

them sort of concrete so people can know

1830

01:08:42,390 --> 01:08:39,839

what they might expect if they join our

1831

01:08:45,749 --> 01:08:42,400

trial which they can do john burbridge

1832

01:08:47,510 --> 01:08:45,759

by coming to intervene immune.com

1833

01:08:49,749 --> 01:08:47,520

yes so uh

1834

01:08:51,590 --> 01:08:49,759

paul's i have to review your case in

1835

01:08:53,189 --> 01:08:51,600

more detail with some of the endpoints

1836

01:08:55,430 --> 01:08:53,199

paul but uh

1837

01:08:58,550 --> 01:08:55,440

but paul took his grimace back i think

1838

01:09:00,870 --> 01:08:58,560

around 11 years so you know in our study

1839

01:09:02,309 --> 01:09:00,880

we published that on average people were

1840

01:09:04,390 --> 01:09:02,319

one and a half years younger at the end

1841

01:09:06,470 --> 01:09:04,400

of the trial than at the beginning

1842

01:09:08,709 --> 01:09:06,480

but paul but that's an average right so

1843

01:09:09,990 --> 01:09:08,719

some people didn't do quite as well and

1844

01:09:12,149 --> 01:09:10,000

there are a few people that did really

1845

01:09:13,510 --> 01:09:12,159

outstandingly so paul is one of those

1846

01:09:15,829 --> 01:09:13,520

people that just kicked it out of the

1847

01:09:18,390 --> 01:09:15,839

park i think he went back 11 years by

1848

01:09:20,630 --> 01:09:18,400

grim age which is awesome but he also

1849

01:09:22,870 --> 01:09:20,640

went back by about 11 age in terms of

1850

01:09:24,550 --> 01:09:22,880

this plasma pheno age clock

1851
01:09:26,470 --> 01:09:24,560
and then we checked him four and a half

1852
01:09:28,390 --> 01:09:26,480
years later

1853
01:09:29,990 --> 01:09:28,400
and he was a little older by that clock

1854
01:09:31,510 --> 01:09:30,000
but he was still four years younger than

1855
01:09:33,829 --> 01:09:31,520
he would have been if he had not

1856
01:09:35,669 --> 01:09:33,839
participated in the original trial and

1857
01:09:37,990 --> 01:09:35,679
then he went on the trim x and added

1858
01:09:40,950 --> 01:09:38,000
another five years on top of that

1859
01:09:42,789 --> 01:09:40,960
so uh paul has done quite well in it and

1860
01:09:44,789 --> 01:09:42,799
currently at least based on the plasma

1861
01:09:46,789 --> 01:09:44,799
pinot age which is the only one we can

1862
01:09:48,870 --> 01:09:46,799
measure on the fly the other ones we

1863
01:09:51,110 --> 01:09:48,880

have to wait until the treatment is over

1864

01:09:52,709 --> 01:09:51,120

to to get a measurement but uh

1865

01:09:55,270 --> 01:09:52,719

based on that one clock that we can

1866

01:09:57,510 --> 01:09:55,280

measure on the fly paul is now younger

1867

01:09:59,910 --> 01:09:57,520

biologically than he was

1868

01:10:02,470 --> 01:09:59,920

basically five and a half years ago

1869

01:10:04,390 --> 01:10:02,480

uh whereas five and a half years ago he

1870

01:10:06,229 --> 01:10:04,400

was biologically three years older than

1871

01:10:07,990 --> 01:10:06,239

his chronological age

1872

01:10:10,070 --> 01:10:08,000

so you know we've actually pulled him

1873

01:10:12,470 --> 01:10:10,080

back in time quite a bit

1874

01:10:15,030 --> 01:10:12,480

and so uh if we can do that for paul we

1875

01:10:17,350 --> 01:10:15,040

can do that for others as well uh so i

1876

01:10:19,350 --> 01:10:17,360

think uh there's a lot of exciting

1877

01:10:20,790 --> 01:10:19,360

things that that we can that we can look

1878

01:10:22,950 --> 01:10:20,800

forward to

1879

01:10:23,910 --> 01:10:22,960

right now one thing i i do have to ask

1880

01:10:28,070 --> 01:10:23,920

you

1881

01:10:29,110 --> 01:10:28,080

and like my father my father was six

1882

01:10:31,189 --> 01:10:29,120

foot two

1883

01:10:32,709 --> 01:10:31,199

by the time he was 80 years old he was

1884

01:10:35,350 --> 01:10:32,719

about my height

1885

01:10:36,470 --> 01:10:35,360

um which is several inches shorter

1886

01:10:38,870 --> 01:10:36,480

yeah

1887

01:10:39,830 --> 01:10:38,880

so what about that the type of you know

1888

01:10:45,350 --> 01:10:39,840

the

1889

01:10:47,510 --> 01:10:45,360

way to i mean

1890

01:10:50,149 --> 01:10:47,520

you could maybe live longer but do you

1891

01:10:52,390 --> 01:10:50,159

get to every cell of the body

1892

01:10:54,070 --> 01:10:52,400

you do because growth hormone goes

1893

01:10:56,950 --> 01:10:54,080

everywhere it touches virtually

1894

01:10:58,390 --> 01:10:56,960

everything dhea goes everywhere touches

1895

01:11:00,950 --> 01:10:58,400

all kinds of things

1896

01:11:02,870 --> 01:11:00,960

metformin will improve the general

1897

01:11:03,990 --> 01:11:02,880

milieu in your body which is our third

1898

01:11:06,790 --> 01:11:04,000

component

1899

01:11:08,470 --> 01:11:06,800

by preventing insulin uh insensitivity

1900

01:11:09,510 --> 01:11:08,480

from developing which affects almost

1901

01:11:10,310 --> 01:11:09,520

everything

1902

01:11:12,310 --> 01:11:10,320

so

1903

01:11:13,830 --> 01:11:12,320

but and those are their separate effects

1904

01:11:15,669 --> 01:11:13,840

when you put them together there's going

1905

01:11:16,550 --> 01:11:15,679

to be synergy right

1906

01:11:19,350 --> 01:11:16,560

so

1907

01:11:21,750 --> 01:11:19,360

uh i think what we're looking at is

1908

01:11:25,350 --> 01:11:21,760

arresting those processes that you're

1909

01:11:27,110 --> 01:11:25,360

talking about so why do we get shorter

1910

01:11:29,110 --> 01:11:27,120

as we get older it's because we don't

1911

01:11:30,550 --> 01:11:29,120

have growth hormone if we put growth

1912

01:11:32,870 --> 01:11:30,560

hormone back in we're going to stop

1913

01:11:34,950 --> 01:11:32,880

getting shorter because we're going to

1914

01:11:37,430 --> 01:11:34,960

reverse that process of not you know

1915

01:11:39,189 --> 01:11:37,440

sort of anti-growth you might say

1916

01:11:42,070 --> 01:11:39,199

that's why little old ladies are little

1917

01:11:43,669 --> 01:11:42,080

and old and lady you know i mean they're

1918

01:11:45,830 --> 01:11:43,679

they're little because they're shrinking

1919

01:11:47,750 --> 01:11:45,840

because they're losing bone mass and

1920

01:11:49,750 --> 01:11:47,760

muscle mass and everything else

1921

01:11:51,990 --> 01:11:49,760

and if you extrapolate that forward of

1922

01:11:55,270 --> 01:11:52,000

course you can't achieve a body mass of

1923

01:11:57,910 --> 01:11:55,280

zero and stay alive so if we stop that

1924

01:12:01,510 --> 01:11:57,920

by sort of rebuilding the body instead

1925

01:12:02,790 --> 01:12:01,520

of letting it go downhill uh we're

1926

01:12:05,270 --> 01:12:02,800

likely to have

1927

01:12:07,910 --> 01:12:05,280

a better outcome

1928

01:12:09,990 --> 01:12:07,920

but can you reverse everything we don't

1929

01:12:11,510 --> 01:12:10,000

know for so for example if you have very

1930

01:12:13,590 --> 01:12:11,520

bad arthritis

1931

01:12:16,550 --> 01:12:13,600

and your your joints are very gnarly and

1932

01:12:18,310 --> 01:12:16,560

everything uh we may improve the health

1933

01:12:20,070 --> 01:12:18,320

of those joints we may prevent them from

1934

01:12:21,430 --> 01:12:20,080

getting worse but whether we can

1935

01:12:23,030 --> 01:12:21,440

actually reverse

1936

01:12:24,630 --> 01:12:23,040

you know bone

1937

01:12:25,910 --> 01:12:24,640

overgrowth that's a different story

1938

01:12:26,630 --> 01:12:25,920

maybe not

1939

01:12:31,030 --> 01:12:26,640

but

1940

01:12:33,110 --> 01:12:31,040

does is it regenerates cartilage so why

1941

01:12:35,830 --> 01:12:33,120

do your joints get so bad in the first

1942

01:12:38,229 --> 01:12:35,840

place uh it's related at least to the

1943

01:12:41,990 --> 01:12:38,239

destruction of the cartilage uh in in

1944

01:12:44,470 --> 01:12:42,000

the joint uh area and if your cartilage

1945

01:12:46,709 --> 01:12:44,480

was preserved by for example taking

1946

01:12:48,470 --> 01:12:46,719

growth hormone uh you may never get

1947

01:12:51,270 --> 01:12:48,480

gnarly in the first place so that's

1948

01:12:53,270 --> 01:12:51,280

that's what we want to do

1949

01:12:55,669 --> 01:12:53,280

interesting wow uh

1950

01:12:57,750 --> 01:12:55,679

and let's see there was a question

1951

01:12:59,910 --> 01:12:57,760

someone wanted to know here it is uh is

1952

01:13:02,390 --> 01:12:59,920

there an age demographic like

1953

01:13:05,030 --> 01:13:02,400

for instance if you're over 60 don't

1954

01:13:07,270 --> 01:13:05,040

bother i mean does that does that does

1955

01:13:09,990 --> 01:13:07,280

that happen i mean do you have not

1956

01:13:11,189 --> 01:13:10,000

that's a really great question uh

1957

01:13:15,110 --> 01:13:11,199

so

1958

01:13:16,709 --> 01:13:15,120

on the on the chance that we have very

1959

01:13:17,669 --> 01:13:16,719

little time left i'll just give you the

1960

01:13:19,750 --> 01:13:17,679

most

1961

01:13:20,950 --> 01:13:19,760

punchy answer to that question

1962

01:13:23,990 --> 01:13:20,960

to start with

1963

01:13:27,110 --> 01:13:24,000

and that is every cell in your body

1964

01:13:29,189 --> 01:13:27,120

still remembers how to be young

1965

01:13:31,110 --> 01:13:29,199

all you have to do is remind it

1966

01:13:33,830 --> 01:13:31,120

and so we know this because you can take

1967

01:13:36,149 --> 01:13:33,840

any cell in your body even if it's 85

1968

01:13:39,270 --> 01:13:36,159

and turn it back into a 20 year old cell

1969

01:13:41,590 --> 01:13:39,280

in 24 hours by just adjusting gene

1970

01:13:43,990 --> 01:13:41,600

expression in that cell that's been done

1971

01:13:47,430 --> 01:13:44,000

at harvard in a way that uh you know

1972

01:13:49,510 --> 01:13:47,440

took an 81 year old skin cell or so and

1973

01:13:52,550 --> 01:13:49,520

took it back to a 20 year old skin cell

1974

01:13:53,350 --> 01:13:52,560

24 hours just by changing one gene

1975

01:13:56,149 --> 01:13:53,360

so

1976

01:13:59,270 --> 01:13:56,159

it's never too late in that sense

1977

01:14:01,910 --> 01:13:59,280

you have the same genes at 80 or beyond

1978

01:14:03,669 --> 01:14:01,920

that you had when you were 12 or or

1979

01:14:06,229 --> 01:14:03,679

younger it's just a matter of teaching

1980

01:14:08,070 --> 01:14:06,239

your body how to use those genes again

1981

01:14:09,750 --> 01:14:08,080

but with respect now to something more

1982

01:14:11,510 --> 01:14:09,760

specific which would be

1983

01:14:14,470 --> 01:14:11,520

the treatment that paul has undergone

1984

01:14:16,470 --> 01:14:14,480

and that i myself am uh undergoing now

1985

01:14:18,470 --> 01:14:16,480

as a as an enrollee in my own trial

1986

01:14:20,550 --> 01:14:18,480

trimx

1987

01:14:22,310 --> 01:14:20,560

we think that this treatment is likely

1988

01:14:25,750 --> 01:14:22,320

to benefit people at least out to the

1989

01:14:27,669 --> 01:14:25,760

age of 80 or so based on animal studies

1990

01:14:29,590 --> 01:14:27,679

and actually one guy got into the

1991

01:14:33,030 --> 01:14:29,600

treatment into the trial at the age of

1992

01:14:34,390 --> 01:14:33,040

80 right before he turned 81 and he came

1993

01:14:36,390 --> 01:14:34,400

within a hair's breath being

1994

01:14:39,510 --> 01:14:36,400

disqualified because we have an 80 year

1995

01:14:41,990 --> 01:14:39,520

old cut off but he got in so he's now 81

1996

01:14:43,750 --> 01:14:42,000

he's been in the trial for a few months

1997

01:14:46,950 --> 01:14:43,760

and he's beating

1998

01:14:49,110 --> 01:14:46,960

uh other people in his age group at uh

1999

01:14:51,510 --> 01:14:49,120

these cross-country uh running meets

2000

01:14:53,669 --> 01:14:51,520

that he likes to participate in uh he's

2001

01:14:55,430 --> 01:14:53,679

he's beating his own personal best

2002

01:14:58,950 --> 01:14:55,440

records also now

2003

01:15:01,110 --> 01:14:58,960

uh and we had somebody else who was uh

2004

01:15:03,510 --> 01:15:01,120

not quite as old as that who increased

2005

01:15:05,350 --> 01:15:03,520

his muscle strength quite a bit just by

2006

01:15:08,149 --> 01:15:05,360

being in the in the trial

2007

01:15:10,790 --> 01:15:08,159

so um actually there was a 77 year old

2008

01:15:13,350 --> 01:15:10,800

woman whose uh epic whose at least

2009

01:15:14,229 --> 01:15:13,360

plasma athena wage went back five years

2010

01:15:15,910 --> 01:15:14,239

uh

2011

01:15:16,790 --> 01:15:15,920

very quickly after getting into the

2012

01:15:17,910 --> 01:15:16,800

trial

2013

01:15:22,310 --> 01:15:17,920

so

2014

01:15:23,590 --> 01:15:22,320

i would say don't give up hope there's

2015

01:15:25,750 --> 01:15:23,600

still hope

2016

01:15:27,910 --> 01:15:25,760

so martin that that was greg's punchy

2017

01:15:29,980 --> 01:15:27,920

answer like you said so just imagine his

2018

01:15:31,830 --> 01:15:29,990

non-punchy emails

2019

01:15:34,390 --> 01:15:31,840

[Laughter]

2020

01:15:36,070 --> 01:15:34,400

all right you could specify any age

2021

01:15:38,950 --> 01:15:36,080

minimum too

2022

01:15:41,510 --> 01:15:38,960

oh wow

2023

01:15:43,350 --> 01:15:41,520

presently our age minimum is 40.

2024

01:15:45,990 --> 01:15:43,360

i see we don't really think you need it

2025

01:15:48,229 --> 01:15:46,000

uh uh if you're younger than 40 although

2026

01:15:50,630 --> 01:15:48,239

people have inquired and maybe someday

2027

01:15:53,110 --> 01:15:50,640

we'll go there but um

2028

01:15:56,070 --> 01:15:53,120

i regenerated my own thymus in about a

2029

01:15:57,430 --> 01:15:56,080

month when i was 46 so i think uh if

2030

01:15:59,669 --> 01:15:57,440

you're in your 40s you're going to

2031

01:16:01,590 --> 01:15:59,679

respond pretty well and as long as you

2032

01:16:03,990 --> 01:16:01,600

can reverse things you don't have to

2033

01:16:06,149 --> 01:16:04,000

prevent them we i think prevention is

2034

01:16:08,070 --> 01:16:06,159

always good but since this is a new

2035

01:16:10,070 --> 01:16:08,080

treatment a new experimental thing that

2036

01:16:12,149 --> 01:16:10,080

we're doing we don't want to risk

2037

01:16:13,669 --> 01:16:12,159

people's uh health when they don't

2038

01:16:15,669 --> 01:16:13,679

really need it so

2039

01:16:18,709 --> 01:16:15,679

we've established a

2040

01:16:19,669 --> 01:16:18,719

a young age limit of 40 so far

2041

01:16:23,189 --> 01:16:19,679

okay

2042

01:16:27,189 --> 01:16:25,189

that we can regrow the thymus is to then

2043

01:16:28,229 --> 01:16:27,199

go on maintenance doses and keep it that

2044

01:16:30,310 --> 01:16:28,239

way

2045

01:16:31,350 --> 01:16:30,320

wow that that's that's really exciting

2046

01:16:33,830 --> 01:16:31,360

so yeah

2047

01:16:36,709 --> 01:16:33,840

cali kid said something weird down below

2048

01:16:38,870 --> 01:16:36,719

but anyway that's his question

2049

01:16:42,950 --> 01:16:38,880

uh dialys machines

2050

01:16:44,870 --> 01:16:42,960

what does that have any play in in

2051

01:16:47,750 --> 01:16:44,880

doing any of the work you're doing

2052

01:16:50,030 --> 01:16:47,760

dialysis machines yeah

2053

01:16:51,910 --> 01:16:50,040

no i think what he may be thinking of is

2054

01:16:53,350 --> 01:16:51,920

plasmapheresis machines which are a

2055

01:16:55,350 --> 01:16:53,360

little bit similar

2056

01:16:56,149 --> 01:16:55,360

so with dialysis they take your blood

2057

01:16:57,510 --> 01:16:56,159

out

2058

01:16:59,030 --> 01:16:57,520

uh they put it through an artificial

2059

01:17:00,310 --> 01:16:59,040

kidney and they put it back in and that

2060

01:17:01,510 --> 01:17:00,320

takes the poisons out of your

2061

01:17:03,669 --> 01:17:01,520

bloodstream

2062

01:17:06,470 --> 01:17:03,679

but with plasmapheresis you can take the

2063

01:17:08,709 --> 01:17:06,480

blood out of your body remove the plasma

2064

01:17:10,790 --> 01:17:08,719

throw it in the wastebasket replace it

2065

01:17:12,630 --> 01:17:10,800

with a salt solution and put that back

2066

01:17:14,310 --> 01:17:12,640

into your body and that's supposed to

2067

01:17:16,950 --> 01:17:14,320

rejuvenate you at least according to

2068

01:17:19,110 --> 01:17:16,960

irena convoy's study

2069

01:17:21,750 --> 01:17:19,120

i think that the human side of that has

2070

01:17:24,149 --> 01:17:21,760

not played out as well as we had hoped

2071

01:17:26,470 --> 01:17:24,159

uh it even her broden study was not

2072

01:17:28,630 --> 01:17:26,480

perfect but it did show a reversal of

2073

01:17:30,550 --> 01:17:28,640

certain features of brain aging and

2074

01:17:34,390 --> 01:17:30,560

obviously brain aging is very very

2075

01:17:36,350 --> 01:17:34,400

important so if we can capture a brain

2076

01:17:38,149 --> 01:17:36,360

de-aging benefit by

2077

01:17:39,430 --> 01:17:38,159

plasmophoresis that would be a good

2078

01:17:41,030 --> 01:17:39,440

thing to do

2079

01:17:43,990 --> 01:17:41,040

and one of the

2080

01:17:46,229 --> 01:17:44,000

unanticipated benefits of our trim

2081

01:17:48,149 --> 01:17:46,239

trials has been the effect on the

2082

01:17:50,870 --> 01:17:48,159

kidneys as well

2083

01:17:52,630 --> 01:17:50,880

oh how about that so we just lost him i

2084

01:17:54,709 --> 01:17:52,640

knew that that would happen because he

2085

01:17:56,950 --> 01:17:54,719

was making some sputtering noises

2086

01:17:59,030 --> 01:17:56,960

so is there an age limit to how many

2087

01:18:01,510 --> 01:17:59,040

years biological age can differ from

2088

01:18:02,950 --> 01:18:01,520

chronological age are you able to answer

2089

01:18:04,070 --> 01:18:02,960

that paul or

2090

01:18:05,270 --> 01:18:04,080

what's that

2091

01:18:07,750 --> 01:18:05,280

up too late

2092

01:18:10,070 --> 01:18:07,760

uh yeah i you know

2093

01:18:11,189 --> 01:18:10,080

i think that's a function of how old you

2094

01:18:16,950 --> 01:18:11,199

are

2095

01:18:19,110 --> 01:18:16,960

that disparity can get higher but like

2096

01:18:21,030 --> 01:18:19,120

greg said it really helps to start early

2097

01:18:23,910 --> 01:18:21,040

i think there's a certain amount of

2098

01:18:26,470 --> 01:18:23,920

reversal or repair that you can do

2099

01:18:28,870 --> 01:18:26,480

once you've already had that much aging

2100

01:18:29,830 --> 01:18:28,880

happen so i don't know of any specific

2101

01:18:31,350 --> 01:18:29,840

number but

2102

01:18:33,510 --> 01:18:31,360

i think there you know the underlying

2103

01:18:35,270 --> 01:18:33,520

message that greg said is that right now

2104

01:18:38,790 --> 01:18:35,280

our ceiling is 80

2105

01:18:41,110 --> 01:18:38,800

that may increase but if you're 80

2106

01:18:43,350 --> 01:18:41,120

at like greg said you know whatever age

2107

01:18:45,189 --> 01:18:43,360

you are all your cells know how to be

2108

01:18:46,950 --> 01:18:45,199

young that's a really kind of

2109

01:18:49,270 --> 01:18:46,960

inspirational message i hadn't heard

2110

01:18:51,030 --> 01:18:49,280

that before so that means that we just

2111

01:18:53,189 --> 01:18:51,040

need to find the right technique to

2112

01:18:54,950 --> 01:18:53,199

remind yourselves how to be young and

2113

01:18:57,350 --> 01:18:54,960

then that can produce a very large

2114

01:18:59,189 --> 01:18:57,360

disparity between your biological and

2115

01:19:01,189 --> 01:18:59,199

chronological age

2116

01:19:03,350 --> 01:19:01,199

so do you think there's a is there a

2117

01:19:05,830 --> 01:19:03,360

turning point let's talk about the

2118

01:19:07,510 --> 01:19:05,840

thymus itself is there a turning point

2119

01:19:08,390 --> 01:19:07,520

where it's just too late and that cannot

2120

01:19:10,709 --> 01:19:08,400

be

2121

01:19:11,990 --> 01:19:10,719

you know revitalized

2122

01:19:15,110 --> 01:19:12,000

well you know

2123

01:19:17,750 --> 01:19:15,120

greg mentioned 80 is our cutoff now and

2124

01:19:20,390 --> 01:19:17,760

that's not necessarily because

2125

01:19:22,470 --> 01:19:20,400

we don't think it will help after that

2126

01:19:24,790 --> 01:19:22,480

but when we're doing these trials

2127

01:19:26,390 --> 01:19:24,800

we're publishing the results so one of

2128

01:19:28,709 --> 01:19:26,400

the things one of the choices you have

2129

01:19:31,270 --> 01:19:28,719

to make is that you really want people

2130

01:19:34,229 --> 01:19:31,280

that you think will respond quite well

2131

01:19:35,990 --> 01:19:34,239

and i think the older you get past 80

2132

01:19:38,149 --> 01:19:36,000

there's other factors that come into

2133

01:19:39,910 --> 01:19:38,159

play where it's just not so much under

2134

01:19:41,910 --> 01:19:39,920

control but

2135

01:19:44,709 --> 01:19:41,920

you know if somebody were to come to us

2136

01:19:46,229 --> 01:19:44,719

let's say they're 83 or 84 with very

2137

01:19:48,390 --> 01:19:46,239

strong health i think we would still

2138

01:19:50,070 --> 01:19:48,400

consider them and and there's also

2139

01:19:52,550 --> 01:19:50,080

things they can do on their own without

2140

01:19:54,149 --> 01:19:52,560

being an official participant in the

2141

01:19:55,830 --> 01:19:54,159

trim trial you know there's a lot of

2142

01:19:58,149 --> 01:19:55,840

things like nad and metformin that

2143

01:19:59,669 --> 01:19:58,159

people can do on their own

2144

01:20:01,510 --> 01:19:59,679

with the supervision of their own

2145

01:20:02,310 --> 01:20:01,520

physician

2146

01:20:04,390 --> 01:20:02,320

so

2147

01:20:06,870 --> 01:20:04,400

in wrapping this up paul

2148

01:20:08,629 --> 01:20:06,880

is for the average listener out there

2149

01:20:11,110 --> 01:20:08,639

someone that is not willing to

2150

01:20:12,709 --> 01:20:11,120

participate in the trial or or can't i

2151
01:20:15,270 --> 01:20:12,719
know there's a little bit of a cost to

2152
01:20:17,270 --> 01:20:15,280
it but for the average person out there

2153
01:20:19,270 --> 01:20:17,280
if you were to give advice for just

2154
01:20:22,310 --> 01:20:19,280
plain longevity would it be our

2155
01:20:24,149 --> 01:20:22,320
everything we basically covered already

2156
01:20:28,950 --> 01:20:24,159
yeah i think

2157
01:20:31,830 --> 01:20:28,960
nutrition

2158
01:20:32,709 --> 01:20:31,840
i think fasting

2159
01:20:34,709 --> 01:20:32,719
right there

2160
01:20:37,189 --> 01:20:34,719
uh sleep that's something we haven't

2161
01:20:39,030 --> 01:20:37,199
talked about yeah and i know that if

2162
01:20:40,950 --> 01:20:39,040
someone is getting very poor sleep in

2163
01:20:42,070 --> 01:20:40,960

their life that can really shorten your

2164

01:20:44,790 --> 01:20:42,080

life

2165

01:20:47,270 --> 01:20:44,800

so that's really important um

2166

01:20:48,709 --> 01:20:47,280

without using you know being dependent

2167

01:20:50,070 --> 01:20:48,719

on something that's really hard

2168

01:20:53,510 --> 01:20:50,080

sometimes

2169

01:20:55,510 --> 01:20:53,520

yes by choosing it as you get older um

2170

01:20:57,669 --> 01:20:55,520

i think you know there's the biological

2171

01:21:00,149 --> 01:20:57,679

drive to sleep as soon as you wake up

2172

01:21:01,669 --> 01:21:00,159

the body is increasing that physical

2173

01:21:03,910 --> 01:21:01,679

urge to sleep

2174

01:21:06,390 --> 01:21:03,920

and it you know with life being hectic

2175

01:21:07,990 --> 01:21:06,400

and artificial lights and screens and

2176
01:21:09,910 --> 01:21:08,000
things like that and stress it gets

2177
01:21:12,149 --> 01:21:09,920
harder to sleep and maybe you have to go

2178
01:21:14,550 --> 01:21:12,159
to the bathroom etc

2179
01:21:17,110 --> 01:21:14,560
so i think the big three are sleep

2180
01:21:17,910 --> 01:21:17,120
nutrition and some form of exercise just

2181
01:21:20,550 --> 01:21:17,920
you know

2182
01:21:22,870 --> 01:21:20,560
time-tested things that we know are very

2183
01:21:24,790 --> 01:21:22,880
important and there's just more and more

2184
01:21:25,669 --> 01:21:24,800
research that if you don't have good

2185
01:21:27,590 --> 01:21:25,679
sleep

2186
01:21:30,149 --> 01:21:27,600
the other things that you do aren't

2187
01:21:31,990 --> 01:21:30,159
going to have that much impact and then

2188
01:21:34,310 --> 01:21:32,000

i think on top of that

2189

01:21:35,830 --> 01:21:34,320

is some kind of fasting

2190

01:21:37,750 --> 01:21:35,840

uh whether it's you know intermittent

2191

01:21:40,709 --> 01:21:37,760

where you don't have breakfast like i do

2192

01:21:43,510 --> 01:21:40,719

or you do the 23 hours or i've done

2193

01:21:45,750 --> 01:21:43,520

like a 10-day fast as well that has a

2194

01:21:47,669 --> 01:21:45,760

lot of good evidence in mammals

2195

01:21:50,149 --> 01:21:47,679

and you and greg banded around some of

2196

01:21:52,149 --> 01:21:50,159

the other specific things you can do

2197

01:21:53,110 --> 01:21:52,159

um but it's really taking care of

2198

01:21:54,950 --> 01:21:53,120

yourself

2199

01:21:56,790 --> 01:21:54,960

as more of these things like the trim

2200

01:21:57,910 --> 01:21:56,800

trial which was not available five years

2201

01:21:59,990 --> 01:21:57,920

ago

2202

01:22:02,790 --> 01:22:00,000

become available for people with you

2203

01:22:05,030 --> 01:22:02,800

know average economic means there's so

2204

01:22:06,870 --> 01:22:05,040

many things happening now that you can

2205

01:22:08,390 --> 01:22:06,880

start doing besides that kind of like

2206

01:22:11,990 --> 01:22:08,400

holy trinity

2207

01:22:15,430 --> 01:22:12,000

of sleep and exercise and nutrition that

2208

01:22:17,830 --> 01:22:15,440

it's it's just increasing exponentially

2209

01:22:20,470 --> 01:22:17,840

for everybody right now

2210

01:22:22,070 --> 01:22:20,480

what was that movie i i can't remember

2211

01:22:23,669 --> 01:22:22,080

it was button something where the guy

2212

01:22:26,470 --> 01:22:23,679

reversed age

2213

01:22:27,590 --> 01:22:26,480

benjamin button benjamin button

2214

01:22:29,270 --> 01:22:27,600

that's what i'm going to start calling

2215

01:22:31,669 --> 01:22:29,280

you paul but

2216

01:22:33,270 --> 01:22:31,679

anyway thank you so much it's been a

2217

01:22:35,430 --> 01:22:33,280

real pleasure always fun talking to you

2218

01:22:37,189 --> 01:22:35,440

paul likewise martin my pleasure all

2219

01:22:39,910 --> 01:22:37,199

right and i hope the trial continues to

2220

01:22:41,669 --> 01:22:39,920

go on and you get younger and i won't

2221

01:22:45,350 --> 01:22:41,679

even recognize you anymore but can you

2222

01:22:47,590 --> 01:22:45,360

see the bulge of my thickness right here

2223

01:22:48,470 --> 01:22:47,600

tailor my shirt an iron something iron

2224

01:22:51,189 --> 01:22:48,480

yeah

2225

01:22:53,110 --> 01:22:51,199

all right man take care all right bye

2226

01:22:54,950 --> 01:22:53,120

bye now all right everyone so we'll see

2227

01:22:56,550 --> 01:22:54,960

you next time again if you want to check

2228

01:22:59,189 --> 01:22:56,560

out when we have our shows the best way

2229

01:23:01,830 --> 01:22:59,199

to do that is simply click subscribe

2230

01:23:03,830 --> 01:23:01,840

down below it's free and uh to our

2231

01:23:06,709 --> 01:23:03,840

youtube channel and click on the

2232

01:23:08,070 --> 01:23:06,719

notifications thank you so much for

2233

01:23:10,709 --> 01:23:08,080

joining us tonight i thought it was

2234

01:23:25,350 --> 01:23:10,719

fascinating i hope you thought so as