

Ask An Astrobiologist



EPISODE 36: OCTOBER 29<sup>TH</sup>, 2020

**ABGRADCON PANEL EPISODE**



**Astrobiology Program**

1  
00:00:00,680 --> 00:00:28,830

[Music]

2  
00:00:33,030 --> 00:00:30,470

so

3  
00:00:33,750 --> 00:00:33,040

friends and fellow curious humans and

4  
00:00:36,310 --> 00:00:33,760

welcome to

5  
00:00:37,510 --> 00:00:36,320

ask an astrobiologist the show that

6  
00:00:39,830 --> 00:00:37,520

celebrates the science

7  
00:00:42,229 --> 00:00:39,840

and celebrates the scientists involved

8  
00:00:43,190 --> 00:00:42,239

in our quest to understand the nature of

9  
00:00:45,350 --> 00:00:43,200

life

10  
00:00:47,270 --> 00:00:45,360

i'm your host graham lau also known as

11  
00:00:49,350 --> 00:00:47,280

the cosmobiologist

12  
00:00:52,389 --> 00:00:49,360

and we're brought to you by seganet.org

13  
00:00:54,549 --> 00:00:52,399

and the nasa astrobiology program

14

00:00:56,069 --> 00:00:54,559

and today we have a really fun special

15

00:00:58,950 --> 00:00:56,079

episode for all of you

16

00:01:01,270 --> 00:00:58,960

that's going to focus on the history and

17

00:01:02,150 --> 00:01:01,280

the impacts of the astrobiology graduate

18

00:01:05,350 --> 00:01:02,160

conference

19

00:01:07,670 --> 00:01:05,360

or ab grad con i myself when i was a

20

00:01:09,190 --> 00:01:07,680

graduate student was very involved in ab

21

00:01:12,149 --> 00:01:09,200

grad con conferences

22

00:01:15,190 --> 00:01:12,159

i first attended in 2012 i helped to

23

00:01:16,870 --> 00:01:15,200

organize the conference in 2014 and 2015

24

00:01:18,789 --> 00:01:16,880

and as my shirt says even though it's

25

00:01:21,030 --> 00:01:18,799

hard to see in 2016

26

00:01:22,390 --> 00:01:21,040

i was one of the two lead organizers for

27

00:01:24,310 --> 00:01:22,400

this conference

28

00:01:25,590 --> 00:01:24,320

and what is appgradcon you might be

29

00:01:27,350 --> 00:01:25,600

wondering it's

30

00:01:29,190 --> 00:01:27,360

a conference specifically targeting

31

00:01:31,190 --> 00:01:29,200

early career scientists

32

00:01:33,109 --> 00:01:31,200

graduate students primarily but also

33

00:01:36,310 --> 00:01:33,119

some undergraduates and some graduates

34

00:01:37,270 --> 00:01:36,320

are postdocs to come together and share

35

00:01:39,590 --> 00:01:37,280

their research

36

00:01:41,109 --> 00:01:39,600

share their interests but also to

37

00:01:43,030 --> 00:01:41,119

network to learn more about

38

00:01:44,789 --> 00:01:43,040

each other from the various places

39

00:01:46,230 --> 00:01:44,799

around the world they come from

40

00:01:47,830 --> 00:01:46,240

and the different kinds of research

41

00:01:50,230 --> 00:01:47,840

projects they have going on

42

00:01:51,670 --> 00:01:50,240

to learn about collaboration and even

43

00:01:53,109 --> 00:01:51,680

for myself to learn about science

44

00:01:55,429 --> 00:01:53,119

communication that's where

45

00:01:57,749 --> 00:01:55,439

i really realized at appgradcom that i

46

00:01:59,749 --> 00:01:57,759

wanted to learn how to share my science

47

00:02:02,389 --> 00:01:59,759

not just with other geologists and other

48

00:02:04,230 --> 00:02:02,399

biochemists both astrophysicists and

49

00:02:06,149 --> 00:02:04,240

oceanographers and philosophers and

50

00:02:07,109 --> 00:02:06,159

engineers and everyone else i possibly

51

00:02:08,710 --> 00:02:07,119

could

52

00:02:10,150 --> 00:02:08,720

uh and so we're super excited to have a

53

00:02:13,030 --> 00:02:10,160

very special episode

54

00:02:14,630 --> 00:02:13,040

of ask an astrobiologist focusing on ab

55

00:02:16,869 --> 00:02:14,640

grad con today for you

56

00:02:18,390 --> 00:02:16,879

uh we know that things have been really

57

00:02:20,949 --> 00:02:18,400

hard during this pandemic for

58

00:02:23,030 --> 00:02:20,959

everyone and it's absolutely okay for us

59

00:02:24,630 --> 00:02:23,040

to take a moment and reflect on that

60

00:02:26,630 --> 00:02:24,640

and and to work together to make things

61

00:02:28,309 --> 00:02:26,640

better it has been really hard on early

62

00:02:30,309 --> 00:02:28,319

career scientists who

63

00:02:31,910 --> 00:02:30,319

need to travel to these meetings and

64

00:02:32,550 --> 00:02:31,920

need to collaborate and meet other

65

00:02:34,309 --> 00:02:32,560

people

66

00:02:36,229 --> 00:02:34,319

to build their professional networks and

67

00:02:37,350 --> 00:02:36,239

prepare for their futures as scientists

68

00:02:40,070 --> 00:02:37,360

and engineers and

69

00:02:41,830 --> 00:02:40,080

in other realms they wish to pursue and

70

00:02:44,150 --> 00:02:41,840

you might know that ad grad con

71

00:02:46,070 --> 00:02:44,160

2020 was postponed this year

72

00:02:47,750 --> 00:02:46,080

unfortunately due to the pandemic

73

00:02:50,790 --> 00:02:47,760

uh it has been rescheduled though so

74

00:02:52,550 --> 00:02:50,800

keep an eye out at [abgradcon.org](http://abgradcon.org)

75

00:02:55,190 --> 00:02:52,560

uh for next year's conference taking

76  
00:02:55,990 --> 00:02:55,200  
place from 14 to 17 september in tokyo

77  
00:02:57,430 --> 00:02:56,000  
japan

78  
00:02:59,190 --> 00:02:57,440  
we're really looking forward to ab grad

79  
00:03:01,830 --> 00:02:59,200  
con 2021

80  
00:03:03,430 --> 00:03:01,840  
uh and then for today is going to be a

81  
00:03:04,470 --> 00:03:03,440  
really special episode like i said so

82  
00:03:06,630 --> 00:03:04,480  
instead of doing

83  
00:03:08,149 --> 00:03:06,640  
our photo contest we normally do we

84  
00:03:08,869 --> 00:03:08,159  
wanted to share really quickly a few

85  
00:03:10,869 --> 00:03:08,879  
memories

86  
00:03:12,390 --> 00:03:10,879  
from twitter that a few past attendees

87  
00:03:15,589 --> 00:03:12,400  
shared with us

88  
00:03:17,990 --> 00:03:15,599

first off demetra autry shared a pic

89

00:03:19,589 --> 00:03:18,000

on twitter of a picture from abradcom

90

00:03:21,350 --> 00:03:19,599

2008

91

00:03:23,589 --> 00:03:21,360

uh which seems like a long time ago but

92

00:03:25,110 --> 00:03:23,599

it's been a launch pad for many people

93

00:03:26,789 --> 00:03:25,120

uh including some of the researchers who

94

00:03:28,949 --> 00:03:26,799

were joining me today uh who were

95

00:03:30,710 --> 00:03:28,959

talking about ab grad khan

96

00:03:32,550 --> 00:03:30,720

and sanjoy saam the leader of blue

97

00:03:35,589 --> 00:03:32,560

marble space he also

98

00:03:37,910 --> 00:03:35,599

led abrad khan in 2009 and he said that

99

00:03:39,830 --> 00:03:37,920

ab grad khan is where he realized that

100

00:03:41,110 --> 00:03:39,840

a collective of humans working together

101  
00:03:43,190 --> 00:03:41,120  
towards a goal

102  
00:03:45,350 --> 00:03:43,200  
is much more productive than the sum of

103  
00:03:48,229 --> 00:03:45,360  
the individual parts

104  
00:03:49,910 --> 00:03:48,239  
mary sabuda also mentioned that it's a

105  
00:03:51,830 --> 00:03:49,920  
non-judgmental environment at

106  
00:03:53,270 --> 00:03:51,840  
grad con and that she made many friends

107  
00:03:55,270 --> 00:03:53,280  
in the field from doing that and

108  
00:03:57,190 --> 00:03:55,280  
i agree entirely it's how i built most

109  
00:04:00,070 --> 00:03:57,200  
of my professional network

110  
00:04:01,509 --> 00:04:00,080  
and monica vidalia said it was beyond

111  
00:04:03,990 --> 00:04:01,519  
exciting to discover just how

112  
00:04:05,509 --> 00:04:04,000  
interdisciplinary astrobiology really is

113  
00:04:07,429 --> 00:04:05,519

thanks to ab grad khan

114

00:04:08,550 --> 00:04:07,439

she learned so much in just a few short

115

00:04:09,750 --> 00:04:08,560

days and created not just new

116

00:04:11,910 --> 00:04:09,760

collaborations

117

00:04:13,270 --> 00:04:11,920

but new friendships and i think once we

118

00:04:14,710 --> 00:04:13,280

introduce our guests here you'll hear a

119

00:04:16,069 --> 00:04:14,720

lot of that as well

120

00:04:17,830 --> 00:04:16,079

it's definitely a place for building

121

00:04:19,430 --> 00:04:17,840

networks for building and maintaining

122

00:04:21,030 --> 00:04:19,440

friendships and connections

123

00:04:22,550 --> 00:04:21,040

throughout the realm for early career

124

00:04:25,270 --> 00:04:22,560

scientists

125

00:04:26,790 --> 00:04:25,280

and also as always a huge thanks to

126

00:04:28,870 --> 00:04:26,800

those of you out there who

127

00:04:30,150 --> 00:04:28,880

who share information about our show who

128

00:04:32,310 --> 00:04:30,160

share the graphics

129

00:04:34,070 --> 00:04:32,320

who reach out to our guests who get

130

00:04:35,749 --> 00:04:34,080

involved on twitter and facebook and

131

00:04:37,110 --> 00:04:35,759

instagram and linkedin and tick tock and

132

00:04:37,670 --> 00:04:37,120

read it and all these other places that

133

00:04:41,590 --> 00:04:37,680

you

134

00:04:43,670 --> 00:04:41,600

online in the conversation

135

00:04:45,189 --> 00:04:43,680

we especially want to say thanks to

136

00:04:47,990 --> 00:04:45,199

brooke caruthers

137

00:04:49,430 --> 00:04:48,000

rabia abdul rasheed and mike lee and

138

00:04:51,510 --> 00:04:49,440

also i want to give a really special

139

00:04:53,830 --> 00:04:51,520

shout out to sarah treadwell

140

00:04:55,670 --> 00:04:53,840

who was a young scientist program intern

141

00:04:57,030 --> 00:04:55,680

this summer with me at blue marble space

142

00:04:58,629 --> 00:04:57,040

institute of science

143

00:05:00,710 --> 00:04:58,639

and is now going to be not only a

144

00:05:02,710 --> 00:05:00,720

visiting scholar working with me

145

00:05:04,390 --> 00:05:02,720

but is also running my teleprompter in

146

00:05:06,710 --> 00:05:04,400

the background for our show

147

00:05:08,710 --> 00:05:06,720

uh she's going to help uh monitoring all

148

00:05:10,150 --> 00:05:08,720

of your questions on segon net and on

149

00:05:12,150 --> 00:05:10,160

the facebook chat

150

00:05:13,830 --> 00:05:12,160

so if you see sarah just know that she's

151  
00:05:15,510 --> 00:05:13,840  
the one who then is sharing all of this

152  
00:05:18,550 --> 00:05:15,520  
awesome information with me

153  
00:05:21,189 --> 00:05:18,560  
and helping you connect with our guests

154  
00:05:22,230 --> 00:05:21,199  
so all of that mouthful said i'm so

155  
00:05:25,189 --> 00:05:22,240  
happy to welcome

156  
00:05:27,029 --> 00:05:25,199  
all of our guests all doctors we have

157  
00:05:30,270 --> 00:05:27,039  
lena nowak joining us

158  
00:05:31,430 --> 00:05:30,280  
mark neveaux sandra celia strom and

159  
00:05:33,430 --> 00:05:31,440  
vladostamenkovic

160  
00:05:36,830 --> 00:05:33,440  
all joining us so everyone thank you so

161  
00:05:41,430 --> 00:05:38,469  
astrobiologist

162  
00:05:42,710 --> 00:05:41,440  
thanks graham hi rob hey good morning

163  
00:05:43,189 --> 00:05:42,720

awesome and like i said this is going to

164

00:05:45,110 --> 00:05:43,199

be a fun

165

00:05:46,230 --> 00:05:45,120

episode and kind of new for us we've

166

00:05:48,550 --> 00:05:46,240

never had such a large

167

00:05:50,710 --> 00:05:48,560

group of people together on the show and

168

00:05:52,870 --> 00:05:50,720

so i think what i'll start doing

169

00:05:54,710 --> 00:05:52,880

is just to ask each of you a little bit

170

00:05:56,629 --> 00:05:54,720

about you know what got you into the

171

00:05:58,550 --> 00:05:56,639

sciences what your journey has been

172

00:06:00,710 --> 00:05:58,560

a lot of our viewers are early career

173

00:06:02,230 --> 00:06:00,720

scientists they want to know how can

174

00:06:03,990 --> 00:06:02,240

they become researchers how can they

175

00:06:05,270 --> 00:06:04,000

become astrobiologists

176

00:06:07,749 --> 00:06:05,280

uh and so if each of you could just

177

00:06:09,110 --> 00:06:07,759

briefly share with us uh your pathway i

178

00:06:10,950 --> 00:06:09,120

think i think i'll start with lena

179

00:06:12,550 --> 00:06:10,960

if you don't mind uh sharing your

180

00:06:14,150 --> 00:06:12,560

pathway into the sciences and what you

181

00:06:16,070 --> 00:06:14,160

currently do

182

00:06:17,590 --> 00:06:16,080

yeah sure i'm happy to say hello

183

00:06:19,990 --> 00:06:17,600

everyone yeah i'm lena

184

00:06:20,710 --> 00:06:20,000

i'm a planetary geophysical modeler from

185

00:06:22,070 --> 00:06:20,720

germany

186

00:06:23,990 --> 00:06:22,080

so for me it's actually late in the

187

00:06:25,590 --> 00:06:24,000

evening now and even dark outside

188

00:06:28,070 --> 00:06:25,600

already

189

00:06:29,990 --> 00:06:28,080

actually how i got there i actually had

190

00:06:31,350 --> 00:06:30,000

nothing to do with astrobiology in the

191

00:06:33,749 --> 00:06:31,360

beginning when i was studying

192

00:06:35,590 --> 00:06:33,759

at university i was studying mathematics

193

00:06:36,629 --> 00:06:35,600

so something that's rather dry compared

194

00:06:39,830 --> 00:06:36,639

to what i do now

195

00:06:41,189 --> 00:06:39,840

to be honest but then as a i was looking

196

00:06:42,870 --> 00:06:41,199

for a phd

197

00:06:45,029 --> 00:06:42,880

topic i wanted to have something more

198

00:06:47,270 --> 00:06:45,039

applied so i wanted to still

199

00:06:49,110 --> 00:06:47,280

do the mathematical numerical

200

00:06:50,150 --> 00:06:49,120

computational background that i built up

201  
00:06:52,390 --> 00:06:50,160  
at university

202  
00:06:54,469 --> 00:06:52,400  
but i wanted to apply it to topics that

203  
00:06:56,150 --> 00:06:54,479  
i find interesting and

204  
00:06:58,309 --> 00:06:56,160  
when i realized that there's a german

205  
00:06:59,350 --> 00:06:58,319  
aerospace center with an institute on

206  
00:07:02,469 --> 00:06:59,360  
plenty research

207  
00:07:04,469 --> 00:07:02,479  
actually next door of my university of

208  
00:07:06,390 --> 00:07:04,479  
course i asked there first for a phd and

209  
00:07:07,749 --> 00:07:06,400  
i was very lucky that they were exactly

210  
00:07:10,629 --> 00:07:07,759  
looking for someone like me

211  
00:07:11,909 --> 00:07:10,639  
at that time and so for me it was really

212  
00:07:13,990 --> 00:07:11,919  
lucky to get into

213  
00:07:16,070 --> 00:07:14,000

to this whole field of planetary

214

00:07:18,150 --> 00:07:16,080

sciences this way

215

00:07:19,749 --> 00:07:18,160

and i was actually part of the larger

216

00:07:22,230 --> 00:07:19,759

netgroup

217

00:07:24,150 --> 00:07:22,240

focusing on astrobiology topics so

218

00:07:26,150 --> 00:07:24,160

specifically on planetary habitability

219

00:07:28,309 --> 00:07:26,160

and evolution

220

00:07:30,390 --> 00:07:28,319

and after a couple of years when i was

221

00:07:32,309 --> 00:07:30,400

looking for a postdoc position there was

222

00:07:33,670 --> 00:07:32,319

yet another network it was actually in

223

00:07:35,589 --> 00:07:33,680

belgium at the time

224

00:07:37,990 --> 00:07:35,599

looking again on planetary evolution

225

00:07:41,110 --> 00:07:38,000

habitability aspects so it was a

226

00:07:43,029 --> 00:07:41,120

perfect match for me and i had some

227

00:07:44,629 --> 00:07:43,039

five really nice years in belgium and

228

00:07:46,150 --> 00:07:44,639

brussets at the royal observatory of

229

00:07:47,990 --> 00:07:46,160

belgium there

230

00:07:50,070 --> 00:07:48,000

and yeah a few years back i was quite

231

00:07:51,749 --> 00:07:50,080

lucky to get a junior professorship

232

00:07:53,270 --> 00:07:51,759

in germany which is actually like an

233

00:07:56,150 --> 00:07:53,280

assistant professorship

234

00:07:57,670 --> 00:07:56,160

position in the us and so i'm building

235

00:07:59,670 --> 00:07:57,680

up my my group now

236

00:08:01,110 --> 00:07:59,680

on modelling's interior of planets

237

00:08:02,469 --> 00:08:01,120

outgassing and understanding the

238

00:08:04,309 --> 00:08:02,479

coupling between the interior and the

239

00:08:05,510 --> 00:08:04,319

atmosphere essentially

240

00:08:07,510 --> 00:08:05,520

that's awesome yeah and it's good to

241

00:08:08,629 --> 00:08:07,520

point out that we use different terms

242

00:08:09,830 --> 00:08:08,639

across the world for some of these

243

00:08:11,430 --> 00:08:09,840

different positions and

244

00:08:13,270 --> 00:08:11,440

i even discovered this past year that

245

00:08:15,270 --> 00:08:13,280

the word graduate student itself isn't

246

00:08:16,469 --> 00:08:15,280

isn't necessarily the same thing

247

00:08:18,230 --> 00:08:16,479

in lots of different places which is

248

00:08:19,670 --> 00:08:18,240

really interesting to so when you are

249

00:08:21,189 --> 00:08:19,680

speaking to people across the globe

250

00:08:22,950 --> 00:08:21,199

remember that we do use different terms

251

00:08:25,589 --> 00:08:22,960

for some of these positions

252

00:08:27,110 --> 00:08:25,599

uh how about mark novo next uh what was

253

00:08:28,390 --> 00:08:27,120

your pathway mark into your current

254

00:08:31,510 --> 00:08:28,400

career

255

00:08:32,149 --> 00:08:31,520

yeah so hi everyone i'm mark um i i've

256

00:08:34,070 --> 00:08:32,159

been

257

00:08:35,670 --> 00:08:34,080

uh super interested in astrobiology ever

258

00:08:37,509 --> 00:08:35,680

since i was a teenager really but

259

00:08:40,389 --> 00:08:37,519

i learned i could do this for a living

260

00:08:42,630 --> 00:08:40,399

about 10 years ago maybe 11 years ago

261

00:08:43,750 --> 00:08:42,640

as an intern at nasa's goddard space

262

00:08:45,350 --> 00:08:43,760

flight center in the suburbs of

263

00:08:47,750 --> 00:08:45,360

washington dc

264

00:08:49,030 --> 00:08:47,760

back then that was i'm french and so i

265

00:08:51,829 --> 00:08:49,040

was studying in france

266

00:08:53,030 --> 00:08:51,839

aerospace engineering and i came to

267

00:08:55,509 --> 00:08:53,040

goddard to

268

00:08:57,350 --> 00:08:55,519

to intern as an aerospace engineer but

269

00:08:59,910 --> 00:08:57,360

then i discovered the science side

270

00:09:01,670 --> 00:08:59,920

and that was love at first sight i i

271

00:09:04,070 --> 00:09:01,680

applied for phd programs

272

00:09:05,910 --> 00:09:04,080

in the us did my phd research at arizona

273

00:09:08,870 --> 00:09:05,920

state university

274

00:09:10,710 --> 00:09:08,880

and after that i came back to the dc

275

00:09:12,070 --> 00:09:10,720

area although that was kind of uh kind

276

00:09:13,509 --> 00:09:12,080  
of random but i worked at nasa

277

00:09:16,630 --> 00:09:13,519  
headquarters

278

00:09:19,030 --> 00:09:16,640  
in the astrobiology program um until

279

00:09:19,750 --> 00:09:19,040  
about two years ago where i joined nasa

280

00:09:22,070 --> 00:09:19,760  
goddard

281

00:09:23,350 --> 00:09:22,080  
um and since i've been i've been working

282

00:09:25,590 --> 00:09:23,360  
there it's great place

283

00:09:26,630 --> 00:09:25,600  
um and my favorite destination to search

284

00:09:28,949 --> 00:09:26,640  
for life as uh

285

00:09:30,070 --> 00:09:28,959  
is the icy worlds of the solar system

286

00:09:32,790 --> 00:09:30,080  
and the oceans that lie

287

00:09:33,910 --> 00:09:32,800  
beneath awesome yeah and there's there's

288

00:09:35,509 --> 00:09:33,920

much to explore

289

00:09:36,870 --> 00:09:35,519

in our solar system and beyond for

290

00:09:38,550 --> 00:09:36,880

planetary formation but also for the

291

00:09:39,910 --> 00:09:38,560

formation of icy worlds and

292

00:09:41,670 --> 00:09:39,920

understanding you know these oceans and

293

00:09:43,430 --> 00:09:41,680

whether or not there could be life there

294

00:09:45,509 --> 00:09:43,440

uh it's huge for astrobiology so i'm

295

00:09:47,750 --> 00:09:45,519

sure we'll have a lot of questions from

296

00:09:49,190 --> 00:09:47,760

our audience later on in the episode

297

00:09:51,430 --> 00:09:49,200

uh about all these things that you're

298

00:09:52,949 --> 00:09:51,440

all working on uh how about sandra

299

00:09:56,310 --> 00:09:52,959

celiastrom next

300

00:09:58,949 --> 00:09:56,320

uh what what's your pathway been yeah so

301  
00:09:59,829 --> 00:09:58,959  
i kind of discovered astrobiology during

302  
00:10:01,750 --> 00:09:59,839  
high school

303  
00:10:03,030 --> 00:10:01,760  
and when i was looking for the internet

304  
00:10:05,670 --> 00:10:03,040  
on the internet then i

305  
00:10:06,949 --> 00:10:05,680  
and i always liked the stars and but i

306  
00:10:09,590 --> 00:10:06,959  
also always liked like

307  
00:10:11,350 --> 00:10:09,600  
fossils and ancient life and i realized

308  
00:10:13,509 --> 00:10:11,360  
there is actually a subject that

309  
00:10:15,509 --> 00:10:13,519  
combines the two subjects so it was a

310  
00:10:17,509 --> 00:10:15,519  
perfect subject so

311  
00:10:19,509 --> 00:10:17,519  
and this was also kind of around when

312  
00:10:19,910 --> 00:10:19,519  
they announced that they found life in

313  
00:10:27,190 --> 00:10:19,920

this

314

00:10:30,310 --> 00:10:27,200

eight four zero zero one and

315

00:10:32,069 --> 00:10:30,320

and then actually then i did there was

316

00:10:35,350 --> 00:10:32,079

no real astrobiology in

317

00:10:35,990 --> 00:10:35,360

sweden so i'm in sweden so i did an

318

00:10:38,630 --> 00:10:36,000

undergrad

319

00:10:40,550 --> 00:10:38,640

actually in engineering biology but

320

00:10:41,590 --> 00:10:40,560

actually as i was doing my master's

321

00:10:43,670 --> 00:10:41,600

thesis

322

00:10:45,590 --> 00:10:43,680

there was this guy that called himself

323

00:10:46,710 --> 00:10:45,600

the first astrobiologist in sweden and

324

00:10:48,870 --> 00:10:46,720

he was on tv

325

00:10:51,110 --> 00:10:48,880

commenting the landing of i think it was

326

00:10:53,509 --> 00:10:51,120

the murrow verse or something

327

00:10:55,509 --> 00:10:53,519

and and i actually sent him an email and

328

00:10:57,269 --> 00:10:55,519

got a master's three faces through him

329

00:10:58,710 --> 00:10:57,279

so you can actually get a master's

330

00:11:01,269 --> 00:10:58,720

through history

331

00:11:02,630 --> 00:11:01,279

through like actually seeing something

332

00:11:05,110 --> 00:11:02,640

through tv and then

333

00:11:06,790 --> 00:11:05,120

and then i did my master's and i

334

00:11:07,350 --> 00:11:06,800

actually did my master's at the place

335

00:11:10,310 --> 00:11:07,360

i'm actually

336

00:11:11,509 --> 00:11:10,320

working now this is sweden's largest

337

00:11:15,430 --> 00:11:11,519

research institute

338

00:11:17,670 --> 00:11:15,440

rice and and and then we applied for

339

00:11:20,870 --> 00:11:17,680

money for phd so i continued

340

00:11:23,430 --> 00:11:20,880

and i did a phd in so i have a phd in

341

00:11:26,069 --> 00:11:23,440

neochemistry so i'm studying organics

342

00:11:26,870 --> 00:11:26,079

in rocks usually doing like in situ

343

00:11:29,430 --> 00:11:26,880

measurements

344

00:11:30,069 --> 00:11:29,440

trying to localize organics to specific

345

00:11:34,310 --> 00:11:30,079

features

346

00:11:37,269 --> 00:11:34,320

in rocks including margin meteorites

347

00:11:39,190 --> 00:11:37,279

and this and after i finished my phd i

348

00:11:40,630 --> 00:11:39,200

got a permanent position as a research

349

00:11:43,190 --> 00:11:40,640

scientist that is rice

350

00:11:44,150 --> 00:11:43,200

and currently my biggest project maybe

351  
00:11:46,949 --> 00:11:44,160  
is i just

352  
00:11:47,670 --> 00:11:46,959  
was selected to become a return sample

353  
00:11:50,949 --> 00:11:47,680  
scientist

354  
00:11:53,110 --> 00:11:50,959  
on the mars 2020 rover

355  
00:11:55,030 --> 00:11:53,120  
so i'm going to be part of the team to

356  
00:11:58,150 --> 00:11:55,040  
select the

357  
00:11:59,190 --> 00:11:58,160  
samples for uh for the mars 2020 rover

358  
00:12:00,790 --> 00:11:59,200  
to be drilled

359  
00:12:02,629 --> 00:12:00,800  
among other signs all the other

360  
00:12:05,269 --> 00:12:02,639  
scientists working on the excellent

361  
00:12:07,509 --> 00:12:05,279  
scientists working on mars 2020. so

362  
00:12:09,110 --> 00:12:07,519  
that's so well set on my path we

363  
00:12:09,990 --> 00:12:09,120

definitely need awesome geochemistry too

364

00:12:11,750 --> 00:12:10,000

and we want to get

365

00:12:14,310 --> 00:12:11,760

the best samples back we possibly can

366

00:12:16,310 --> 00:12:14,320

from mars uh sample return is like a

367

00:12:17,670 --> 00:12:16,320

holy grail right in space sciences and

368

00:12:19,670 --> 00:12:17,680

astrobiology

369

00:12:21,269 --> 00:12:19,680

um you know so we might know that like

370

00:12:22,829 --> 00:12:21,279

right now uh hayabusa2

371

00:12:25,350 --> 00:12:22,839

is on its way home with some asteroidal

372

00:12:27,590 --> 00:12:25,360

materials uh we have osiris-rex on its

373

00:12:29,269 --> 00:12:27,600

way home with some asteroidal materials

374

00:12:30,949 --> 00:12:29,279

uh but we haven't returned any samples

375

00:12:32,949 --> 00:12:30,959

from the surface of mars yet and so

376

00:12:34,150 --> 00:12:32,959

that'll be a huge undertaking for us to

377

00:12:37,190 --> 00:12:34,160

have happen

378

00:12:38,310 --> 00:12:37,200

um how about vladostamenkovitch how

379

00:12:40,150 --> 00:12:38,320

about uh what was your

380

00:12:42,389 --> 00:12:40,160

your pathway in the sciences towards

381

00:12:44,150 --> 00:12:42,399

your career you currently have

382

00:12:45,670 --> 00:12:44,160

so i think first good morning good

383

00:12:46,790 --> 00:12:45,680

afternoon good evening everybody all

384

00:12:49,509 --> 00:12:46,800

over the world

385

00:12:50,310 --> 00:12:49,519

um nice to be here so my path started

386

00:12:52,790 --> 00:12:50,320

really young

387

00:12:53,990 --> 00:12:52,800

i think mainly with next generation uh

388

00:12:55,750 --> 00:12:54,000

meaning star trek

389

00:12:57,110 --> 00:12:55,760

i think diana troy and captain picard

390

00:12:59,829 --> 00:12:57,120

can alert me in

391

00:13:00,550 --> 00:12:59,839

um and you know for me and that's

392

00:13:03,829 --> 00:13:00,560

actually

393

00:13:05,829 --> 00:13:03,839

quite real i think star trek has been uh

394

00:13:07,990 --> 00:13:05,839

influencing me very early on because you

395

00:13:10,870 --> 00:13:08,000

know they don't really care about

396

00:13:12,150 --> 00:13:10,880

you know catalyzing or looking at like

397

00:13:13,670 --> 00:13:12,160

stars they don't really want to find

398

00:13:14,389 --> 00:13:13,680

life in the universe explore life in the

399

00:13:16,310 --> 00:13:14,399

universe

400

00:13:17,910 --> 00:13:16,320

so i became very very early just

401  
00:13:19,670 --> 00:13:17,920  
fascinated by life

402  
00:13:21,670 --> 00:13:19,680  
and i try to find my way into that in

403  
00:13:23,990 --> 00:13:21,680  
switzerland where i grew up

404  
00:13:25,269 --> 00:13:24,000  
and uh there was nothing really focusing

405  
00:13:27,269 --> 00:13:25,279  
on astrobiology but

406  
00:13:28,550 --> 00:13:27,279  
i started studying physics at the eta

407  
00:13:29,990 --> 00:13:28,560  
and zurich theoretical physics and

408  
00:13:32,230 --> 00:13:30,000  
mathematics

409  
00:13:34,550 --> 00:13:32,240  
and in parallel i there was a space

410  
00:13:36,550 --> 00:13:34,560  
biology institute and

411  
00:13:37,990 --> 00:13:36,560  
with some really good friends of mine we

412  
00:13:40,389 --> 00:13:38,000  
went straight into there and

413  
00:13:41,430 --> 00:13:40,399

started doing experiments on uh on zero

414

00:13:44,150 --> 00:13:41,440

g planes

415

00:13:46,790 --> 00:13:44,160

and then later on i became the pi of

416

00:13:48,949 --> 00:13:46,800

sending action experiment to the iss

417

00:13:49,829 --> 00:13:48,959

while i was still studying and on a

418

00:13:51,829 --> 00:13:49,839

russian

419

00:13:53,910 --> 00:13:51,839

satellite the the latter one which was

420

00:13:56,389 --> 00:13:53,920

actually the first one exploded

421

00:13:57,670 --> 00:13:56,399

uh but we went luckily fortunate to the

422

00:13:59,189 --> 00:13:57,680

iss

423

00:14:01,269 --> 00:13:59,199

and then i searched more for the path

424

00:14:01,990 --> 00:14:01,279

how to get really to how to use my

425

00:14:04,949 --> 00:14:02,000

capabilities

426

00:14:06,949 --> 00:14:04,959

to explore life in the universe and i

427

00:14:08,710 --> 00:14:06,959

took it then to a phd at the same place

428

00:14:09,670 --> 00:14:08,720

that lena did a phd in the german

429

00:14:12,949 --> 00:14:09,680

aerospace center

430

00:14:14,150 --> 00:14:12,959

in berlin and i used my physics

431

00:14:17,269 --> 00:14:14,160

knowledge to

432

00:14:17,750 --> 00:14:17,279

expand into geophysics uh high pressure

433

00:14:20,150 --> 00:14:17,760

physics

434

00:14:21,910 --> 00:14:20,160

especially um and planet revolution

435

00:14:25,030 --> 00:14:21,920

models and so i worked a lot

436

00:14:26,069 --> 00:14:25,040

on planet revolution interior um and high

437

00:14:29,350 --> 00:14:26,079

pressure physics

438

00:14:31,829 --> 00:14:29,360

what it means for life on exoplanets um

439

00:14:33,430 --> 00:14:31,839

mainly and also on mars and i was kind

440

00:14:35,350 --> 00:14:33,440

of between exoplanets and mars

441

00:14:37,910 --> 00:14:35,360

because as i always say i don't like to

442

00:14:39,910 --> 00:14:37,920

discriminate against anything or anyone

443

00:14:41,110 --> 00:14:39,920

including planets and planetary objects

444

00:14:43,350 --> 00:14:41,120

they're all cool

445

00:14:45,509 --> 00:14:43,360

and we should have a large diversity of

446

00:14:47,509 --> 00:14:45,519

them that's the most beautiful thing

447

00:14:48,550 --> 00:14:47,519

so and when you do physics you can

448

00:14:51,110 --> 00:14:48,560

generalize

449

00:14:51,910 --> 00:14:51,120

i think linda can very much identify

450

00:14:53,910 --> 00:14:51,920

that as well

451  
00:14:55,269 --> 00:14:53,920  
because when you do you know look at

452  
00:14:56,230 --> 00:14:55,279  
pressure and temperature it's just

453  
00:14:58,389 --> 00:14:56,240  
different different

454  
00:14:59,430 --> 00:14:58,399  
objects but it's still generalizable to

455  
00:15:02,550 --> 00:14:59,440  
everything

456  
00:15:05,189 --> 00:15:02,560  
um and then after my phd i

457  
00:15:06,230 --> 00:15:05,199  
uh flew out to the us i did a i was a

458  
00:15:09,670 --> 00:15:06,240  
swiss national

459  
00:15:10,230 --> 00:15:09,680  
science fellow at mit uh whereas many

460  
00:15:12,470 --> 00:15:10,240  
working

461  
00:15:13,670 --> 00:15:12,480  
on exoplanet habitability and interior

462  
00:15:16,310 --> 00:15:13,680  
revolution

463  
00:15:17,030 --> 00:15:16,320

and then i became a simon's fellow on

464

00:15:20,389 --> 00:15:17,040

the origin of

465

00:15:21,110 --> 00:15:20,399

life which took me to caltech and from

466

00:15:23,509 --> 00:15:21,120

caltech

467

00:15:25,509 --> 00:15:23,519

i transferred and joined jpl the jet

468

00:15:28,629 --> 00:15:25,519

propulsion laboratory

469

00:15:30,230 --> 00:15:28,639

to uh work there and i'm actually

470

00:15:32,230 --> 00:15:30,240

mainly focused on building a lab over

471

00:15:34,389 --> 00:15:32,240

there i built the lab called the fire

472

00:15:37,590 --> 00:15:34,399

lab standing for plant hydrology

473

00:15:39,509 --> 00:15:37,600

and uh and resource exploration but

474

00:15:40,949 --> 00:15:39,519

it was mainly astrobiology lab so i've

475

00:15:43,509 --> 00:15:40,959

been mainly working there on

476  
00:15:44,470 --> 00:15:43,519  
subsurface habitability particularly of

477  
00:15:46,550 --> 00:15:44,480  
mars

478  
00:15:48,629 --> 00:15:46,560  
and i was doing the science but in the

479  
00:15:51,189 --> 00:15:48,639  
same time also looking at the technology

480  
00:15:52,230 --> 00:15:51,199  
and i was leading a development of an

481  
00:15:54,949 --> 00:15:52,240  
instrument

482  
00:15:56,870 --> 00:15:54,959  
called thor standing for transmissive h<sub>2</sub>

483  
00:15:59,990 --> 00:15:56,880  
reconnaissance to look for water

484  
00:16:02,230 --> 00:16:00,000  
in the deep subset of this mars um and

485  
00:16:03,110 --> 00:16:02,240  
you know right now so just taking steps

486  
00:16:05,990 --> 00:16:03,120  
right now i actually

487  
00:16:06,470 --> 00:16:06,000  
left jpl a few weeks ago and i'm right

488  
00:16:08,949 --> 00:16:06,480

now

489

00:16:10,710 --> 00:16:08,959

um senior director and the principal

490

00:16:14,470 --> 00:16:10,720

technologist for isru

491

00:16:16,790 --> 00:16:14,480

at blue origin isru stands for in-situ

492

00:16:19,670 --> 00:16:16,800

resource utilization

493

00:16:21,430 --> 00:16:19,680

and blue origin is one of the you know

494

00:16:22,150 --> 00:16:21,440

leading companies worldwide and trying

495

00:16:25,749 --> 00:16:22,160

to get us

496

00:16:28,389 --> 00:16:25,759

humans more frequently to space and

497

00:16:29,590 --> 00:16:28,399

make space exploration more feasible and

498

00:16:32,550 --> 00:16:29,600

more common

499

00:16:33,910 --> 00:16:32,560

and um i'm still you know the reason why

500

00:16:36,790 --> 00:16:33,920

germany did that is because

501  
00:16:37,829 --> 00:16:36,800  
it's still astrology for me uh you know

502  
00:16:40,629 --> 00:16:37,839  
for one

503  
00:16:42,470 --> 00:16:40,639  
it's called food that's for the bugs and

504  
00:16:43,030 --> 00:16:42,480  
the other things are resources the same

505  
00:16:44,949 --> 00:16:43,040  
thing

506  
00:16:47,430 --> 00:16:44,959  
so much of my research has been focused

507  
00:16:49,670 --> 00:16:47,440  
on resources and food for life

508  
00:16:51,590 --> 00:16:49,680  
uh and sub-surface exploration because i

509  
00:16:53,269 --> 00:16:51,600  
think that life in the universe

510  
00:16:55,269 --> 00:16:53,279  
especially in our solar system if it's

511  
00:16:56,949 --> 00:16:55,279  
out there it's all in the subsurface

512  
00:16:59,670 --> 00:16:56,959  
and that's the place to really look for

513  
00:17:01,350 --> 00:16:59,680

it today but i think also in the past

514

00:17:03,509 --> 00:17:01,360

i think the subsurface has been the best

515

00:17:05,110 --> 00:17:03,519

place for life and

516

00:17:07,350 --> 00:17:05,120

the reason why i joined blue origin is

517

00:17:08,789 --> 00:17:07,360

because i think we're all doing so much

518

00:17:11,669 --> 00:17:08,799

exciting things

519

00:17:12,470 --> 00:17:11,679

for many different objects and if we

520

00:17:14,549 --> 00:17:12,480

continue

521

00:17:16,710 --> 00:17:14,559

in the status quo we've done so far it

522

00:17:18,630 --> 00:17:16,720

will take us about a few thousand years

523

00:17:21,669 --> 00:17:18,640

to have explored only a fraction of

524

00:17:23,750 --> 00:17:21,679

those and everything will be theoretical

525

00:17:26,309 --> 00:17:23,760

and if you really want to go to you know

526

00:17:28,470 --> 00:17:26,319

go to mars go to series go to

527

00:17:30,630 --> 00:17:28,480

triton go to europa go to all those

528

00:17:31,990 --> 00:17:30,640

places and do many experiments to really

529

00:17:34,870 --> 00:17:32,000

have conclusive evidence

530

00:17:36,310 --> 00:17:34,880

of life or non-life we need to get much

531

00:17:38,390 --> 00:17:36,320

more frequent through space

532

00:17:40,789 --> 00:17:38,400

we can continue the way we've been doing

533

00:17:43,270 --> 00:17:40,799

it and blue origin in that way

534

00:17:44,470 --> 00:17:43,280

is really pushing for that and having

535

00:17:45,590 --> 00:17:44,480

the opportunity now to build a

536

00:17:47,029 --> 00:17:45,600

department for

537

00:17:48,710 --> 00:17:47,039

ins you know in-situ resource

538

00:17:51,029 --> 00:17:48,720

exploration the solar system

539

00:17:52,470 --> 00:17:51,039

i want to help us all to get them more

540

00:17:54,390 --> 00:17:52,480

frequently get data

541

00:17:56,549 --> 00:17:54,400

so we don't have to fight for place on

542

00:17:58,950 --> 00:17:56,559

space missions but we have the breadth

543

00:18:00,470 --> 00:17:58,960

of everything and then we can really

544

00:18:04,150 --> 00:18:00,480

discuss scientifically

545

00:18:05,590 --> 00:18:04,160

and yeah smile altogether

546

00:18:07,830 --> 00:18:05,600

it's a really interesting time right now

547

00:18:09,590 --> 00:18:07,840

right with with new space with all these

548

00:18:12,230 --> 00:18:09,600

private space companies coming up

549

00:18:13,510 --> 00:18:12,240

not only opening access for launch uh

550

00:18:14,470 --> 00:18:13,520

through a lot of new rockets that are

551  
00:18:15,990 --> 00:18:14,480  
being developed

552  
00:18:17,669 --> 00:18:16,000  
but also opening access for new

553  
00:18:19,270 --> 00:18:17,679  
satellite technologies new earth

554  
00:18:20,630 --> 00:18:19,280  
observation technologies

555  
00:18:22,230 --> 00:18:20,640  
and yeah a lot of like you mentioned

556  
00:18:23,830 --> 00:18:22,240  
with blue origin and other companies who

557  
00:18:25,669 --> 00:18:23,840  
want to also go out and

558  
00:18:27,510 --> 00:18:25,679  
and figure out how do we put humans on

559  
00:18:28,630 --> 00:18:27,520  
the moon how do we put humans on mars

560  
00:18:30,630 --> 00:18:28,640  
how will they live there

561  
00:18:32,870 --> 00:18:30,640  
and how can we use resources there and

562  
00:18:33,669 --> 00:18:32,880  
there is a huge astrobiology component

563  
00:18:35,190 --> 00:18:33,679

as well

564

00:18:36,950 --> 00:18:35,200

from a lot of these groups who also want

565

00:18:38,710 --> 00:18:36,960

to want to help us understand

566

00:18:40,470 --> 00:18:38,720

the science of what's going on out there

567

00:18:41,990 --> 00:18:40,480

in the cosmos and i feel like amongst

568

00:18:42,470 --> 00:18:42,000

the five of us we have a good mix here

569

00:18:45,430 --> 00:18:42,480

we have

570

00:18:47,990 --> 00:18:45,440

research institutions government

571

00:18:49,350 --> 00:18:48,000

agencies private companies a non-profit

572

00:18:51,430 --> 00:18:49,360

that we should get together and start

573

00:18:53,590 --> 00:18:51,440

something i think

574

00:18:54,789 --> 00:18:53,600

but um but thank you so much all of you

575

00:18:56,789 --> 00:18:54,799

uh for that

576

00:18:57,830 --> 00:18:56,799

uh a lot of our folks watching at home

577

00:18:59,669 --> 00:18:57,840

right now

578

00:19:01,430 --> 00:18:59,679

in our audience are undergraduate

579

00:19:03,669 --> 00:19:01,440

students or graduate students they are

580

00:19:06,470 --> 00:19:03,679

interested in how they can be involved

581

00:19:08,549 --> 00:19:06,480

and how they can become astrobiologists

582

00:19:10,710 --> 00:19:08,559

and the things that they can do

583

00:19:12,870 --> 00:19:10,720

in their own careers to advance into

584

00:19:15,350 --> 00:19:12,880

awesome careers like all of you have

585

00:19:16,310 --> 00:19:15,360

um but we are here to talk about the

586

00:19:18,870 --> 00:19:16,320

impacts of

587

00:19:19,830 --> 00:19:18,880

early career endeavors specifically at

588

00:19:21,590 --> 00:19:19,840

grad con

589

00:19:23,830 --> 00:19:21,600

and what it's meant for all of us uh i

590

00:19:25,190 --> 00:19:23,840

mentioned earlier i was at four ab grad

591

00:19:28,070 --> 00:19:25,200

cons and and was

592

00:19:29,029 --> 00:19:28,080

a co-lead organizer for one of them uh

593

00:19:30,789 --> 00:19:29,039

we'd love to hear

594

00:19:33,270 --> 00:19:30,799

from all of you what your experiences

595

00:19:36,390 --> 00:19:33,280

with ab grad khan were

596

00:19:37,350 --> 00:19:36,400

how the conference impacted your careers

597

00:19:38,870 --> 00:19:37,360

and so i think i'll go through the same

598

00:19:40,710 --> 00:19:38,880

order again lena if you wouldn't mind

599

00:19:42,630 --> 00:19:40,720

just telling us your experience

600

00:19:45,430 --> 00:19:42,640

in app grad con and what it's meant for

601  
00:19:47,990 --> 00:19:45,440  
you in your career

602  
00:19:50,070 --> 00:19:48,000  
yeah sure so i was actually at uh three

603  
00:19:52,549 --> 00:19:50,080  
epicons um

604  
00:19:54,150 --> 00:19:52,559  
actually before mostly before you've

605  
00:19:55,350 --> 00:19:54,160  
actually went to april console if he is

606  
00:19:58,470 --> 00:19:55,360  
so old right now

607  
00:20:00,789 --> 00:19:58,480  
after your introduction worked um

608  
00:20:01,669 --> 00:20:00,799  
so interestingly from the three upgrade

609  
00:20:03,510 --> 00:20:01,679  
coins that i had

610  
00:20:04,710 --> 00:20:03,520  
two were actually quite special because

611  
00:20:07,830 --> 00:20:04,720  
one was the

612  
00:20:09,590 --> 00:20:07,840  
so far only european version

613  
00:20:11,510 --> 00:20:09,600

i still hope there's going to be another

614

00:20:12,870 --> 00:20:11,520

european aquacon coming up and in that

615

00:20:15,510 --> 00:20:12,880

couple of years

616

00:20:17,270 --> 00:20:15,520

the other one was a canadian one and in

617

00:20:18,070 --> 00:20:17,280

montreal it was also really a nice

618

00:20:21,669 --> 00:20:18,080

experience

619

00:20:25,350 --> 00:20:21,679

and i was also in la um for one of the

620

00:20:27,830 --> 00:20:25,360

um epcot cons and actually in the one

621

00:20:29,270 --> 00:20:27,840

in canada with what happened was that we

622

00:20:31,190 --> 00:20:29,280

were actually lucky to get uh

623

00:20:33,430 --> 00:20:31,200

european funding to send i think it was

624

00:20:34,870 --> 00:20:33,440

like 10 european students to be able to

625

00:20:37,590 --> 00:20:34,880

go there as well and

626  
00:20:38,710 --> 00:20:37,600  
we all really really enjoyed it some of

627  
00:20:40,390 --> 00:20:38,720  
us had been there before

628  
00:20:41,990 --> 00:20:40,400  
for some of them it was the first time

629  
00:20:44,070 --> 00:20:42,000  
and the the

630  
00:20:46,310 --> 00:20:44,080  
spirit of epcretcon was so different

631  
00:20:49,110 --> 00:20:46,320  
from anything that we had from from

632  
00:20:51,909 --> 00:20:49,120  
national or even european organizations

633  
00:20:53,909 --> 00:20:51,919  
that we were exposed to at that time

634  
00:20:56,149 --> 00:20:53,919  
we really said like it's such a shame we

635  
00:20:57,029 --> 00:20:56,159  
really we really need to be more

636  
00:20:59,590 --> 00:20:57,039  
frequently at

637  
00:21:01,270 --> 00:20:59,600  
meetings live at corn but there's always

638  
00:21:02,230 --> 00:21:01,280

this issue it's very difficult to find

639

00:21:05,510 --> 00:21:02,240

funding for

640

00:21:07,669 --> 00:21:05,520

non-us participants to actually join and

641

00:21:09,430 --> 00:21:07,679

i tried for a couple of years to get

642

00:21:11,909 --> 00:21:09,440

some european funding

643

00:21:12,870 --> 00:21:11,919

and so we realized that we actually need

644

00:21:16,230 --> 00:21:12,880

something

645

00:21:18,710 --> 00:21:16,240

quite similar in europe so

646

00:21:19,830 --> 00:21:18,720

because we really enjoyed the aquacon so

647

00:21:21,909 --> 00:21:19,840

much because we

648

00:21:23,990 --> 00:21:21,919

treasured our experience that we had at

649

00:21:25,909 --> 00:21:24,000

epcot condom we wanted to make it open

650

00:21:27,110 --> 00:21:25,919

to as many european participants as

651  
00:21:29,430 --> 00:21:27,120  
possible

652  
00:21:30,390 --> 00:21:29,440  
uh we actually started a couple of years

653  
00:21:31,750 --> 00:21:30,400  
later

654  
00:21:33,909 --> 00:21:31,760  
based from from the european

655  
00:21:36,630 --> 00:21:33,919  
astrobiology network association

656  
00:21:38,230 --> 00:21:36,640  
and a european version and we

657  
00:21:41,270 --> 00:21:38,240  
shamelessly use the name

658  
00:21:43,590 --> 00:21:41,280  
grady actually to show everyone who our

659  
00:21:45,190 --> 00:21:43,600  
big brother is

660  
00:21:46,710 --> 00:21:45,200  
so since a couple of years this is

661  
00:21:49,029 --> 00:21:46,720  
actually it's actually becoming

662  
00:21:49,750 --> 00:21:49,039  
more and more um enthusiastic that

663  
00:21:52,149 --> 00:21:49,760

people like

664

00:21:53,669 --> 00:21:52,159

a wood sufi table is a president since a

665

00:21:55,750 --> 00:21:53,679

couple of years and she really managed

666

00:21:57,350 --> 00:21:55,760

to bring it to a completely new level

667

00:21:58,950 --> 00:21:57,360

and i'm really happy to see it still

668

00:22:01,750 --> 00:21:58,960

going on and really shows

669

00:22:02,310 --> 00:22:01,760

that everyone who's has ever been at an

670

00:22:04,630 --> 00:22:02,320

upgrade

671

00:22:06,390 --> 00:22:04,640

or epcot con meeting always stays the

672

00:22:09,510 --> 00:22:06,400

same yeah you have to go again

673

00:22:10,950 --> 00:22:09,520

it's everyone has to go clearly

674

00:22:13,110 --> 00:22:10,960

yeah it's very addictive right it makes

675

00:22:14,710 --> 00:22:13,120

us want to go back yeah i think ab grad

676

00:22:15,750 --> 00:22:14,720

e this year was also unfortunately

677

00:22:17,590 --> 00:22:15,760

postponed

678

00:22:20,070 --> 00:22:17,600

um because again you know this pandemic

679

00:22:21,669 --> 00:22:20,080

is is around the world it's impacting us

680

00:22:25,350 --> 00:22:21,679

uh but hopefully for everyone in europe

681

00:22:27,110 --> 00:22:25,360

keep your eyes out for appgrati 2021

682

00:22:29,029 --> 00:22:27,120

yes actually this year it was even

683

00:22:31,430 --> 00:22:29,039

virtual so there was a one day online

684

00:22:32,870 --> 00:22:31,440

meeting uh where also epcon for example

685

00:22:35,029 --> 00:22:32,880

was represented

686

00:22:35,909 --> 00:22:35,039

um and probably next year it will be the

687

00:22:39,110 --> 00:22:35,919

same

688

00:22:40,710 --> 00:22:39,120

yeah it's quite likely yeah uh martin

689

00:22:43,590 --> 00:22:40,720

neveux how about you next uh what was

690

00:22:46,950 --> 00:22:43,600

your experience in ab grad con

691

00:22:48,070 --> 00:22:46,960

so i i went to three as well in 2014 15

692

00:22:51,350 --> 00:22:48,080

and 16.

693

00:22:54,390 --> 00:22:51,360

uh the first one was in troy new york

694

00:22:55,990 --> 00:22:54,400

uh the second in madison in wisconsin

695

00:22:59,510 --> 00:22:56,000

and the third and boulder and colorado

696

00:23:02,310 --> 00:22:59,520

so all three in the us

697

00:23:03,029 --> 00:23:02,320

and i would say i would definitely agree

698

00:23:05,909 --> 00:23:03,039

with the

699

00:23:06,630 --> 00:23:05,919

the what lena said about it being

700

00:23:09,669 --> 00:23:06,640

low-key

701

00:23:09,990 --> 00:23:09,679

and the point is to is to meet people

702

00:23:17,750 --> 00:23:10,000

and

703

00:23:20,230 --> 00:23:17,760

sounds too formal collaboration so

704

00:23:21,510 --> 00:23:20,240

you cannot make friends um and it's cool

705

00:23:22,549 --> 00:23:21,520

i mean these are gonna be the people who

706

00:23:23,909 --> 00:23:22,559

are gonna be working with your whole

707

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

career right you can you can go to a

708

00:23:26,950 --> 00:23:25,440

normal conference and

709

00:23:28,390 --> 00:23:26,960

and meet the big shots and so on but

710

00:23:28,789 --> 00:23:28,400

they they won't be here in 10 years i

711

00:23:32,390 --> 00:23:28,799

guess

712

00:23:34,870 --> 00:23:32,400

i mean maybe but uh so so it's

713

00:23:35,430 --> 00:23:34,880

how cool to be able to to you know meet

714

00:23:37,430 --> 00:23:35,440

your

715

00:23:39,029 --> 00:23:37,440

future colleagues into an informal

716

00:23:40,549 --> 00:23:39,039

setting and and really

717

00:23:42,710 --> 00:23:40,559

um i think this is one of the reasons

718

00:23:44,630 --> 00:23:42,720

why it's it's so fun to do extra biology

719

00:23:45,990 --> 00:23:44,640

you you get to work with people

720

00:23:48,950 --> 00:23:46,000

you like for the most part and you can

721

00:23:51,669 --> 00:23:48,960

choose them um but uh but the the

722

00:23:52,549 --> 00:23:51,679

you know the the spirit of um of

723

00:23:55,110 --> 00:23:52,559

collaboration

724

00:23:57,430 --> 00:23:55,120

and uh and and friendship is uh is

725

00:23:59,350 --> 00:23:57,440

really built on on events like this

726

00:24:01,909 --> 00:23:59,360

um so i've definitely felt that i had

727

00:24:05,269 --> 00:24:01,919

upgradecon that that's the first thing

728

00:24:07,830 --> 00:24:05,279

um i scientifically

729

00:24:09,269 --> 00:24:07,840

uh the the first year i participated in

730

00:24:12,549 --> 00:24:09,279

2014

731

00:24:13,510 --> 00:24:12,559

uh i also applied to participate in uh

732

00:24:15,350 --> 00:24:13,520

in a proposal

733

00:24:16,789 --> 00:24:15,360

writing workshop that was just a couple

734

00:24:19,990 --> 00:24:16,799

days before the conference and

735

00:24:20,950 --> 00:24:20,000

it was it was optional and uh that was

736

00:24:22,470 --> 00:24:20,960

that was great

737

00:24:24,470 --> 00:24:22,480

we were in a retreat you know on the

738

00:24:26,710 --> 00:24:24,480

side of the lake uh kind of uh

739

00:24:28,149 --> 00:24:26,720

isolated from the world it was great

740

00:24:31,510 --> 00:24:28,159

landscape and also

741

00:24:33,430 --> 00:24:31,520

quite time to to work on science ideas

742

00:24:35,110 --> 00:24:33,440

um and you know you have to work with

743

00:24:36,230 --> 00:24:35,120

others there people come from the very

744

00:24:37,990 --> 00:24:36,240

different backgrounds so you kind of

745

00:24:41,110 --> 00:24:38,000

have to broaden your ideas

746

00:24:42,149 --> 00:24:41,120

um and i and i did um i had never

747

00:24:45,190 --> 00:24:42,159

thought about

748

00:24:48,470 --> 00:24:45,200

titan and carbon cycling and so on

749

00:24:51,190 --> 00:24:48,480

and uh and that's where i got the first

750

00:24:52,789 --> 00:24:51,200

uh inspiration to to kind of go into

751

00:24:54,390 --> 00:24:52,799

that area of research

752

00:24:56,149 --> 00:24:54,400

and eventually after a couple of

753

00:24:59,269 --> 00:24:56,159

proposals for post docs and so on

754

00:24:59,990 --> 00:24:59,279

um i was fine to do this this work uh

755

00:25:03,430 --> 00:25:00,000

through a through

756

00:25:03,909 --> 00:25:03,440

a full-blown nasa grant um during my

757

00:25:05,510 --> 00:25:03,919

first

758

00:25:07,029 --> 00:25:05,520

postdoc and that just never really

759

00:25:09,269 --> 00:25:07,039

thought it would turn out that way but

760

00:25:11,110 --> 00:25:09,279

it came from from my great home that's

761

00:25:12,789 --> 00:25:11,120

awesome it's amazing how those

762

00:25:13,830 --> 00:25:12,799

things can get sparked that way and i

763

00:25:15,430 --> 00:25:13,840

remember this we used to call it the

764

00:25:18,310 --> 00:25:15,440

research focus group

765

00:25:19,190 --> 00:25:18,320

uh and i was there too in 2014 and 2015

766

00:25:21,029 --> 00:25:19,200

with you

767

00:25:23,110 --> 00:25:21,039

uh and now they changed the name it

768

00:25:26,070 --> 00:25:23,120

sounds cooler now now it's called power

769

00:25:27,909 --> 00:25:26,080

uh it's the proposal writing retreat uh

770

00:25:29,269 --> 00:25:27,919

but with every ab grad con

771

00:25:31,590 --> 00:25:29,279

for those watching who haven't been to

772

00:25:32,870 --> 00:25:31,600

one with every ab grad con it's a

773

00:25:34,870 --> 00:25:32,880

week-long conference

774

00:25:36,230 --> 00:25:34,880

but usually either just before that week

775

00:25:36,710 --> 00:25:36,240

or at the very end of that week there's

776  
00:25:39,510 --> 00:25:36,720  
a one

777  
00:25:41,029 --> 00:25:39,520  
or two day long retreat where you can

778  
00:25:43,909 --> 00:25:41,039  
get together with your peers

779  
00:25:45,510 --> 00:25:43,919  
and write grant proposals and learn this

780  
00:25:46,070 --> 00:25:45,520  
process of what it takes to actually get

781  
00:25:48,070 --> 00:25:46,080  
funding

782  
00:25:50,630 --> 00:25:48,080  
for your science together which is a

783  
00:25:51,909 --> 00:25:50,640  
really cool part of appgrad con

784  
00:25:53,990 --> 00:25:51,919  
sandra how about you what was your

785  
00:25:57,430 --> 00:25:54,000  
experience with abrad khan

786  
00:26:00,990 --> 00:25:57,440  
yeah so i went to two ipad cons

787  
00:26:02,390 --> 00:26:01,000  
also a long time ago so one was at this

788  
00:26:06,310 --> 00:26:02,400

2008

789

00:26:07,590 --> 00:26:06,320

in santa clara um and the second one was

790

00:26:09,510 --> 00:26:07,600

the first one actually that was

791

00:26:12,230 --> 00:26:09,520

organized in europe

792

00:26:12,950 --> 00:26:12,240

in 2010 in sweden which i was part of

793

00:26:14,789 --> 00:26:12,960

the local

794

00:26:16,230 --> 00:26:14,799

organizing committee and the scientific

795

00:26:19,190 --> 00:26:16,240

committee

796

00:26:20,950 --> 00:26:19,200

and so for the first one i mean it was

797

00:26:24,149 --> 00:26:20,960

nice

798

00:26:27,350 --> 00:26:24,159

it was i mean i started my phd in 2007

799

00:26:28,950 --> 00:26:27,360

so 2008 was quite early in my phd so

800

00:26:31,350 --> 00:26:28,960

it was nice to have this and it was

801  
00:26:33,830 --> 00:26:31,360  
before it was in conjunction with the

802  
00:26:34,470 --> 00:26:33,840  
apps icon so it was a nice place you

803  
00:26:36,950 --> 00:26:34,480  
know where you

804  
00:26:38,710 --> 00:26:36,960  
got to know some people before apps icon

805  
00:26:39,750 --> 00:26:38,720  
to have someone you know to hang out

806  
00:26:41,990 --> 00:26:39,760  
with and

807  
00:26:43,669 --> 00:26:42,000  
and even now if i go to apps account

808  
00:26:46,070 --> 00:26:43,679  
later it's still like hi

809  
00:26:46,950 --> 00:26:46,080  
you're here again and you know so it was

810  
00:26:48,870 --> 00:26:46,960  
very nice and

811  
00:26:50,870 --> 00:26:48,880  
and i got to know those people even more

812  
00:26:53,990 --> 00:26:50,880  
of course when we organized those

813  
00:26:55,830 --> 00:26:54,000

a lot of those were part

814

00:26:57,590 --> 00:26:55,840

helped us with the organization the

815

00:27:00,789 --> 00:26:57,600

scientific organization later

816

00:27:01,590 --> 00:27:00,799

in 2010 and of course i learned a lot

817

00:27:03,830 --> 00:27:01,600

when

818

00:27:04,630 --> 00:27:03,840

we organized the conference in sweden

819

00:27:07,909 --> 00:27:04,640

because of

820

00:27:10,870 --> 00:27:07,919

all the logistics and so just

821

00:27:13,269 --> 00:27:10,880

you know reading abstracts picking which

822

00:27:13,750 --> 00:27:13,279

abstracts to and being a session share

823

00:27:16,310 --> 00:27:13,760

you know

824

00:27:17,750 --> 00:27:16,320

you might not get these experiences you

825

00:27:19,350 --> 00:27:17,760

know later

826  
00:27:21,110 --> 00:27:19,360  
until later you know in a normal

827  
00:27:24,870 --> 00:27:21,120  
conference and then also

828  
00:27:27,510 --> 00:27:24,880  
i organized the field trip in

829  
00:27:29,350 --> 00:27:27,520  
in it so we went in it was in sweden and

830  
00:27:29,830 --> 00:27:29,360  
it's in the zillion impact craters it's

831  
00:27:32,470 --> 00:27:29,840  
a large

832  
00:27:34,630 --> 00:27:32,480  
impact crater so we had this bus tour

833  
00:27:36,710 --> 00:27:34,640  
around and i had to

834  
00:27:38,870 --> 00:27:36,720  
you know pick the geological sites to go

835  
00:27:41,510 --> 00:27:38,880  
to and you know guide around and

836  
00:27:42,070 --> 00:27:41,520  
this was a great experience you know and

837  
00:27:44,630 --> 00:27:42,080  
and i

838  
00:27:46,870 --> 00:27:44,640

yes it's not like you know a real or

839

00:27:49,990 --> 00:27:46,880

like a conference with bigwigs

840

00:27:50,630 --> 00:27:50,000

or whatever it's more relaxed so you

841

00:27:54,310 --> 00:27:50,640

don't

842

00:27:55,830 --> 00:27:54,320

maybe have to be you know afraid that

843

00:27:58,630 --> 00:27:55,840

nervous that you would do something

844

00:28:01,669 --> 00:27:58,640

wrong because it's like your peers so

845

00:28:02,230 --> 00:28:01,679

and um some of the people i met i know

846

00:28:05,110 --> 00:28:02,240

at the

847

00:28:05,909 --> 00:28:05,120

2008 they later came to me for doing

848

00:28:09,669 --> 00:28:05,919

analysis

849

00:28:13,190 --> 00:28:09,679

and samples and he actually came from

850

00:28:15,669 --> 00:28:13,200

brazil to do analysis with me and

851  
00:28:17,750 --> 00:28:15,679  
and because of him i learned you know i

852  
00:28:19,830 --> 00:28:17,760  
got to know his phd student and

853  
00:28:21,510 --> 00:28:19,840  
she was at this synchrotron and like you

854  
00:28:23,669 --> 00:28:21,520  
know so it's always like this

855  
00:28:25,350 --> 00:28:23,679  
you know you meet these people and you

856  
00:28:28,230 --> 00:28:25,360  
meet their phd students and

857  
00:28:29,350 --> 00:28:28,240  
you know so it's it's an er you know

858  
00:28:31,190 --> 00:28:29,360  
it's an import

859  
00:28:33,350 --> 00:28:31,200  
good place to get to know people you

860  
00:28:34,870 --> 00:28:33,360  
know early in their careers

861  
00:28:36,789 --> 00:28:34,880  
absolutely yes it's how we build our

862  
00:28:38,149 --> 00:28:36,799  
networks and for all of us who want to

863  
00:28:39,990 --> 00:28:38,159

be astrobiologists or our

864

00:28:41,830 --> 00:28:40,000

astrobiologists it's how we

865

00:28:43,110 --> 00:28:41,840

we build these networks around the world

866

00:28:43,990 --> 00:28:43,120

i know people from around the world

867

00:28:46,070 --> 00:28:44,000

because of abrad

868

00:28:47,909 --> 00:28:46,080

khan and and i think both you and mark

869

00:28:50,310 --> 00:28:47,919

made really important points there

870

00:28:52,230 --> 00:28:50,320

uh your graduate advisor and these

871

00:28:53,990 --> 00:28:52,240

senior scientists who you see in

872

00:28:56,070 --> 00:28:54,000

television shows and movies and things

873

00:28:58,549 --> 00:28:56,080

like that and you read about

874

00:28:59,990 --> 00:28:58,559

in in popular press they're not there

875

00:29:01,350 --> 00:29:00,000

it's it's the graduate students it's

876

00:29:02,549 --> 00:29:01,360

really focused on early career

877

00:29:04,789 --> 00:29:02,559

scientists

878

00:29:06,070 --> 00:29:04,799

and one thing i love is that unlike

879

00:29:07,350 --> 00:29:06,080

other conferences where you have

880

00:29:09,510 --> 00:29:07,360

different sessions and you pick and

881

00:29:12,070 --> 00:29:09,520

choose which ones fit your research

882

00:29:13,029 --> 00:29:12,080

with ab grad con everyone listens to

883

00:29:15,909 --> 00:29:13,039

every talk

884

00:29:17,350 --> 00:29:15,919

and goes and can see every poster and so

885

00:29:19,350 --> 00:29:17,360

if you're a geologist you're going to

886

00:29:20,549 --> 00:29:19,360

learn about astrophysics or biology

887

00:29:22,789 --> 00:29:20,559

if you're a chemist you're going to

888

00:29:24,710 --> 00:29:22,799

learn about science communication and

889

00:29:27,430 --> 00:29:24,720

other realms of the sciences

890

00:29:28,710 --> 00:29:27,440

and i find that to be very cool uh so

891

00:29:30,230 --> 00:29:28,720

vlada how about you what was

892

00:29:32,470 --> 00:29:30,240

what was your experience with ab grad

893

00:29:34,950 --> 00:29:32,480

con and how did it impact your career

894

00:29:36,389 --> 00:29:34,960

well i think that not much new to ad

895

00:29:38,310 --> 00:29:36,399

everything has been only said

896

00:29:39,990 --> 00:29:38,320

i realize now as well in sandra elena

897

00:29:43,029 --> 00:29:40,000

yes i'm also getting older

898

00:29:44,710 --> 00:29:43,039

my first one was also 2008 um

899

00:29:46,549 --> 00:29:44,720

and i had to actually right now look it

900

00:29:49,669 --> 00:29:46,559

up because i wasn't sure i went to my

901  
00:29:52,230 --> 00:29:49,679  
gmail like oh yeah 2008. and i was the

902  
00:29:53,350 --> 00:29:52,240  
co-leading organizer of the 2010 one the

903  
00:29:56,310 --> 00:29:53,360  
first one in europe

904  
00:29:57,909 --> 00:29:56,320  
in sweden uh and that was a really very

905  
00:29:59,510 --> 00:29:57,919  
um profound experience just to

906  
00:30:01,510 --> 00:29:59,520  
understand how to get money

907  
00:30:03,190 --> 00:30:01,520  
uh how to enable money to make things

908  
00:30:05,590 --> 00:30:03,200  
happen and the differences between the

909  
00:30:09,269 --> 00:30:05,600  
us and europe which are very big

910  
00:30:10,950 --> 00:30:09,279  
uh still and have been um and

911  
00:30:14,149 --> 00:30:10,960  
but you know in general what i love

912  
00:30:16,710 --> 00:30:14,159  
really about appreciate

913  
00:30:17,669 --> 00:30:16,720

astrology is an international endeavor

914

00:30:20,070 --> 00:30:17,679

um

915

00:30:21,510 --> 00:30:20,080

it's a multi-planetal endeavor but let's

916

00:30:23,510 --> 00:30:21,520

start with the whole world

917

00:30:25,590 --> 00:30:23,520

and we you know i find it so beautiful

918

00:30:27,990 --> 00:30:25,600

we have this new generation that

919

00:30:29,430 --> 00:30:28,000

we are and everybody around us we are

920

00:30:31,190 --> 00:30:29,440

connected with all our friends and

921

00:30:33,029 --> 00:30:31,200

colleagues all over the world

922

00:30:35,350 --> 00:30:33,039

it's a huge blessing which i think

923

00:30:36,310 --> 00:30:35,360

people before us our phd advisors didn't

924

00:30:38,950 --> 00:30:36,320

really have

925

00:30:40,389 --> 00:30:38,960

they were very local or in their country

926  
00:30:40,710 --> 00:30:40,399  
and i think there's still a lot to be

927  
00:30:43,350 --> 00:30:40,720  
done

928  
00:30:44,549 --> 00:30:43,360  
i mean i've been now for damn eight

929  
00:30:47,029 --> 00:30:44,559  
years in the u.s

930  
00:30:48,230 --> 00:30:47,039  
and even here i realized how we're

931  
00:30:50,710 --> 00:30:48,240  
really isolated

932  
00:30:52,710 --> 00:30:50,720  
i mean you feel the atlantic big times

933  
00:30:54,549 --> 00:30:52,720  
between europe and the us

934  
00:30:55,990 --> 00:30:54,559  
and and that's ridiculous in a time

935  
00:30:58,630 --> 00:30:56,000  
where we deal with climate change

936  
00:31:00,070 --> 00:30:58,640  
global issues and and and that's what

937  
00:31:02,070 --> 00:31:00,080  
apricon really helps

938  
00:31:04,149 --> 00:31:02,080

i think it's one of the most beautiful

939

00:31:05,750 --> 00:31:04,159

questions we address that is

940

00:31:07,750 --> 00:31:05,760

i think the most beautiful question

941

00:31:09,350 --> 00:31:07,760

anything anybody can ask

942

00:31:11,269 --> 00:31:09,360

and we're doing this with all these

943

00:31:13,990 --> 00:31:11,279

colleagues and friends

944

00:31:16,310 --> 00:31:14,000

all over the world it's really a role

945

00:31:19,029 --> 00:31:16,320

model for how the world should be

946

00:31:21,669 --> 00:31:19,039

you know and i think uh that's what i

947

00:31:25,190 --> 00:31:21,679

love about apricon it helps doing that

948

00:31:26,789 --> 00:31:25,200

um and uh i realize actually finally uh

949

00:31:29,110 --> 00:31:26,799

when we organized the first one in

950

00:31:30,710 --> 00:31:29,120

europe 2010 and i had to google this as

951  
00:31:32,310 --> 00:31:30,720  
well up when it was because i forgot the

952  
00:31:34,950 --> 00:31:32,320  
time because i'm that old

953  
00:31:36,149 --> 00:31:34,960  
um it was insanely an impact crater

954  
00:31:38,389 --> 00:31:36,159  
which was the first

955  
00:31:39,269 --> 00:31:38,399  
exploration point for deep subsurface

956  
00:31:41,029 --> 00:31:39,279  
life

957  
00:31:43,350 --> 00:31:41,039  
and for you know bringing this

958  
00:31:45,909 --> 00:31:43,360  
connection that life might be actually

959  
00:31:47,029 --> 00:31:45,919  
mainly in subsurface so i kind of didn't

960  
00:31:49,350 --> 00:31:47,039  
really get that

961  
00:31:50,549 --> 00:31:49,360  
uh only later and it's kind of like

962  
00:31:52,710 --> 00:31:50,559  
funny now knowing that

963  
00:31:53,990 --> 00:31:52,720

you know rimfax is going to be on which

964

00:31:56,789 --> 00:31:54,000

is the radar on mars which

965

00:31:58,389 --> 00:31:56,799

symbol is the horse the swedish horse so

966

00:31:59,029 --> 00:31:58,399

that was the gift we all got there and

967

00:32:04,870 --> 00:31:59,039

we got the

968

00:32:06,549 --> 00:32:04,880

so yeah and and sana's surely thinking

969

00:32:09,029 --> 00:32:06,559

now no no it's different in sweden

970

00:32:11,029 --> 00:32:09,039

but we'll figure it out nope right am i

971

00:32:13,990 --> 00:32:11,039

right i hope

972

00:32:14,549 --> 00:32:14,000

what did you say that we got this little

973

00:32:16,710 --> 00:32:14,559

horse

974

00:32:18,630 --> 00:32:16,720

as a gift for everybody oh yeah yeah

975

00:32:21,190 --> 00:32:18,640

yeah yeah i still have that one yeah

976

00:32:22,549 --> 00:32:21,200

yes and that's the also for for the gpr

977

00:32:25,669 --> 00:32:22,559

on mars right now

978

00:32:29,110 --> 00:32:25,679

um so i really would encourage everybody

979

00:32:32,149 --> 00:32:29,120

um you know go to april cons uh

980

00:32:35,750 --> 00:32:32,159

get to know the people make friends

981

00:32:38,710 --> 00:32:35,760

uh be collaborative uh work together

982

00:32:39,590 --> 00:32:38,720

don't work you know it's this whole

983

00:32:41,990 --> 00:32:39,600

thing in our

984

00:32:43,269 --> 00:32:42,000

current culture about publishing papers

985

00:32:45,750 --> 00:32:43,279

working and stuff

986

00:32:47,430 --> 00:32:45,760

and you know i think sandra said it

987

00:32:48,789 --> 00:32:47,440

really well sanjo is a very wise man for

988

00:32:50,710 --> 00:32:48,799

his age

989

00:32:53,029 --> 00:32:50,720

he's gonna be laughing there but you

990

00:32:56,230 --> 00:32:53,039

know we can really do so much

991

00:32:57,430 --> 00:32:56,240

more together and it's just also so much

992

00:33:00,149 --> 00:32:57,440

more fun

993

00:33:01,509 --> 00:33:00,159

and um you know and that brings me back

994

00:33:03,110 --> 00:33:01,519

to the star trek thing

995

00:33:04,789 --> 00:33:03,120

which i always loved in star trek was

996

00:33:07,029 --> 00:33:04,799

how people work together

997

00:33:08,789 --> 00:33:07,039

and respect each other and care for each

998

00:33:10,470 --> 00:33:08,799

other and that's what i always felt with

999

00:33:13,669 --> 00:33:10,480

appreciate there is this

1000

00:33:14,549 --> 00:33:13,679

real care and curiosity and making

1001  
00:33:17,350 --> 00:33:14,559  
things

1002  
00:33:18,310 --> 00:33:17,360  
together more beautiful and bigger i

1003  
00:33:19,830 --> 00:33:18,320  
love that yeah

1004  
00:33:21,350 --> 00:33:19,840  
and you know and i'm glad that you

1005  
00:33:22,549 --> 00:33:21,360  
mentioned too like the international

1006  
00:33:24,389 --> 00:33:22,559  
component i mean

1007  
00:33:26,230 --> 00:33:24,399  
all five of us here are from various

1008  
00:33:28,950 --> 00:33:26,240  
different places around the world

1009  
00:33:30,310 --> 00:33:28,960  
and uh ab grad con 2021 will take place

1010  
00:33:32,310 --> 00:33:30,320  
in tokyo japan

1011  
00:33:33,430 --> 00:33:32,320  
led by doctors tony gia and kristen

1012  
00:33:35,269 --> 00:33:33,440  
johnson

1013  
00:33:36,870 --> 00:33:35,279

uh and it's gonna be another kind of

1014

00:33:38,149 --> 00:33:36,880

international collaborative conference

1015

00:33:39,590 --> 00:33:38,159

for a lot of people from

1016

00:33:41,669 --> 00:33:39,600

especially around the pacific region to

1017

00:33:43,430 --> 00:33:41,679

come together and join abroad con and

1018

00:33:44,230 --> 00:33:43,440

during this pandemic we've noticed a lot

1019

00:33:46,630 --> 00:33:44,240

more

1020

00:33:47,750 --> 00:33:46,640

uh people coming online new voices from

1021

00:33:49,669 --> 00:33:47,760

around the globe

1022

00:33:51,509 --> 00:33:49,679

people from various countries from

1023

00:33:52,310 --> 00:33:51,519

africa and europe and asia and south

1024

00:33:53,909 --> 00:33:52,320

america

1025

00:33:56,070 --> 00:33:53,919

are also getting super involved in the

1026

00:33:58,950 --> 00:33:56,080

conversation uh with us and

1027

00:34:00,549 --> 00:33:58,960

i love seeing that so much and as i

1028

00:34:01,750 --> 00:34:00,559

mentioned earlier for me one of the big

1029

00:34:04,070 --> 00:34:01,760

things for me

1030

00:34:05,830 --> 00:34:04,080

with ab grad con was it was during ab

1031

00:34:07,430 --> 00:34:05,840

grad con that i realized that being a

1032

00:34:08,310 --> 00:34:07,440

communicator of science someone who

1033

00:34:09,669 --> 00:34:08,320

speaks

1034

00:34:11,270 --> 00:34:09,679

about the power of science and the

1035

00:34:12,310 --> 00:34:11,280

things that we learn in our place in the

1036

00:34:14,950 --> 00:34:12,320

cosmos how this

1037

00:34:16,629 --> 00:34:14,960

impacts our lives and so i'd love for

1038

00:34:17,829 --> 00:34:16,639

for any of you i'll i'll open it up now

1039

00:34:19,349 --> 00:34:17,839

to an open question

1040

00:34:21,669 --> 00:34:19,359

uh if any of you have any thoughts on

1041

00:34:23,990 --> 00:34:21,679

this uh every ab grad con

1042

00:34:24,869 --> 00:34:24,000

includes a a community engagement

1043

00:34:27,270 --> 00:34:24,879

section

1044

00:34:29,109 --> 00:34:27,280

uh some way going out to share science

1045

00:34:32,230 --> 00:34:29,119

with the public in some manner

1046

00:34:33,750 --> 00:34:32,240

uh i wonder uh how that changed for you

1047

00:34:35,909 --> 00:34:33,760

the impact of appgrad

1048

00:34:38,950 --> 00:34:35,919

con learning also how to communicate

1049

00:34:42,069 --> 00:34:40,790

well if i can say something in that

1050

00:34:44,389 --> 00:34:42,079

context i think you just

1051

00:34:45,589 --> 00:34:44,399

you know mentioned it early on we sit

1052

00:34:49,190 --> 00:34:45,599

all together in one room

1053

00:34:50,869 --> 00:34:49,200

we eat our donuts uh or depending on the

1054

00:34:52,710 --> 00:34:50,879

location maybe something else

1055

00:34:54,790 --> 00:34:52,720

uh and we listen to things that we have

1056

00:34:57,270 --> 00:34:54,800

no damn clue about you know we're

1057

00:34:58,550 --> 00:34:57,280

we're hearing things from astrophysics

1058

00:35:01,910 --> 00:34:58,560

biology

1059

00:35:02,950 --> 00:35:01,920

uh from chemistry geology so you really

1060

00:35:05,349 --> 00:35:02,960

first learn

1061

00:35:06,870 --> 00:35:05,359

to explain things simple so that

1062

00:35:08,550 --> 00:35:06,880

everybody can understand it

1063

00:35:10,470 --> 00:35:08,560

and that's really an important gift to

1064

00:35:11,270 --> 00:35:10,480

learn and then you will learn to be

1065

00:35:13,430 --> 00:35:11,280

patient

1066

00:35:14,710 --> 00:35:13,440

because you're not getting it and

1067

00:35:17,109 --> 00:35:14,720

they're not getting it

1068

00:35:18,310 --> 00:35:17,119

and so and i think that's really

1069

00:35:21,030 --> 00:35:18,320

training you that's why

1070

00:35:21,349 --> 00:35:21,040

astrobiologists have i think a good you

1071

00:35:24,310 --> 00:35:21,359

know

1072

00:35:25,750 --> 00:35:24,320

way off without noticing it you'll learn

1073

00:35:27,750 --> 00:35:25,760

to communicate

1074

00:35:29,109 --> 00:35:27,760

to just the community out there to

1075

00:35:30,470 --> 00:35:29,119

everybody

1076

00:35:32,310 --> 00:35:30,480

because you're trying to explain

1077

00:35:32,870 --> 00:35:32,320

something that you know you're learning

1078

00:35:35,030 --> 00:35:32,880

it by

1079

00:35:36,390 --> 00:35:35,040

through the apricot experience and i

1080

00:35:38,230 --> 00:35:36,400

think that's the most important thing

1081

00:35:39,510 --> 00:35:38,240

that you learn to simplify things like

1082

00:35:41,109 --> 00:35:39,520

feyman said once

1083

00:35:43,109 --> 00:35:41,119

you know if you can't explain it in a

1084

00:35:44,950 --> 00:35:43,119

few simple words you didn't get it

1085

00:35:46,710 --> 00:35:44,960

and i totally agree on that you know

1086

00:35:48,150 --> 00:35:46,720

once you throw all these beautiful

1087

00:35:49,829 --> 00:35:48,160

you know complicated words that you

1088

00:35:51,589 --> 00:35:49,839

reuse for publications

1089

00:35:52,870 --> 00:35:51,599

if you can't simplify this and explain

1090

00:35:55,589 --> 00:35:52,880

it to a kiddo

1091

00:35:56,069 --> 00:35:55,599

you haven't gotten your your stuff and

1092

00:35:59,109 --> 00:35:56,079

um

1093

00:36:02,950 --> 00:35:59,119

yeah so that's what i love about it and

1094

00:36:07,030 --> 00:36:05,109

yeah for me and one of the f great cons

1095

00:36:09,430 --> 00:36:07,040

uh the later ones that i um

1096

00:36:11,349 --> 00:36:09,440

attended there was this science flash

1097

00:36:12,710 --> 00:36:11,359

competition like a fame lab like thing

1098

00:36:14,790 --> 00:36:12,720

in the beginning

1099

00:36:16,710 --> 00:36:14,800

and so i rather learned that it's

1100

00:36:18,870 --> 00:36:16,720

actually not that easy to do it

1101

00:36:20,790 --> 00:36:18,880

i think i got the lowest points of all

1102

00:36:21,750 --> 00:36:20,800

the 10 participants if i still remember

1103

00:36:23,510 --> 00:36:21,760

correctly

1104

00:36:25,270 --> 00:36:23,520

because before you think well i just

1105

00:36:26,950 --> 00:36:25,280

take a couple of slides say a little bit

1106

00:36:28,870 --> 00:36:26,960

things and then that's it

1107

00:36:30,950 --> 00:36:28,880

and then i saw these nine amazing

1108

00:36:32,230 --> 00:36:30,960

presentations from the american students

1109

00:36:35,270 --> 00:36:32,240

and they're like oh

1110

00:36:37,109 --> 00:36:35,280

okay i it's really so much more work

1111

00:36:39,589 --> 00:36:37,119

to actually do a good public outreach

1112

00:36:42,550 --> 00:36:39,599

talk than to do a science talk

1113

00:36:44,710 --> 00:36:42,560

so by really not doing a good job i

1114

00:36:46,950 --> 00:36:44,720

actually learned a lot

1115

00:36:48,630 --> 00:36:46,960

i i hope i didn't prove a little bit

1116

00:36:50,069 --> 00:36:48,640

it's not that bad as in the beginning

1117

00:36:51,510 --> 00:36:50,079

anymore but it's really it's really

1118

00:36:53,349 --> 00:36:51,520

tough but it's so important

1119

00:36:55,589 --> 00:36:53,359

and it's so much fun also if you see the

1120

00:36:57,510 --> 00:36:55,599

audience coming back to you

1121

00:36:59,109 --> 00:36:57,520

absolutely uh and i do have to mention

1122

00:36:59,829 --> 00:36:59,119

real quick for our audience uh those

1123

00:37:01,829 --> 00:36:59,839

watching

1124

00:37:03,430 --> 00:37:01,839

if you have questions for anyone

1125

00:37:05,109 --> 00:37:03,440

specific of our guests

1126

00:37:06,870 --> 00:37:05,119

feel free to reach out now in the chats

1127

00:37:08,310 --> 00:37:06,880

and let us know or if you just have a

1128

00:37:10,710 --> 00:37:08,320

general question you want to ask

1129

00:37:12,390 --> 00:37:10,720

any of our guests they can all answer uh

1130

00:37:13,750 --> 00:37:12,400

feel free to reach out now in the chats

1131

00:37:15,510 --> 00:37:13,760

and start asking questions and

1132

00:37:16,870 --> 00:37:15,520

i'll open up that audience chat here in

1133

00:37:20,630 --> 00:37:16,880

just a second

1134

00:37:22,950 --> 00:37:20,640

um but i absolutely agree i did fame lab

1135

00:37:24,310 --> 00:37:22,960

through abradcon and that changed the

1136

00:37:26,150 --> 00:37:24,320

course of my career

1137

00:37:27,349 --> 00:37:26,160

uh just by learning how to communicate

1138

00:37:28,870 --> 00:37:27,359

and i love that there was a

1139

00:37:30,470 --> 00:37:28,880

communication workshop

1140

00:37:32,150 --> 00:37:30,480

inside of fame lab that we were also

1141

00:37:35,109 --> 00:37:32,160

learning how to share

1142

00:37:36,790 --> 00:37:35,119

our science uh so let me see some

1143

00:37:37,510 --> 00:37:36,800

questions here from our audience we have

1144

00:38:29,430 --> 00:37:37,520

a

1145

00:38:32,950 --> 00:38:29,440

the u.s coming from

1146

00:38:35,750 --> 00:38:32,960

from europe um and i just

1147

00:38:36,870 --> 00:38:35,760

uh reached out to people who were

1148

00:38:38,870 --> 00:38:36,880

astrobiologists

1149

00:38:40,630 --> 00:38:38,880

uh so i found them i went through i

1150

00:38:41,430 --> 00:38:40,640

typed that astrobiology or something

1151

00:38:43,349 --> 00:38:41,440

like that

1152

00:38:45,190 --> 00:38:43,359

i got taken to a website that said well

1153

00:38:46,790 --> 00:38:45,200

they hear these these teams doing

1154

00:38:49,510 --> 00:38:46,800

astrology research

1155

00:38:50,150 --> 00:38:49,520

um and and here are the people you know

1156

00:38:52,870 --> 00:38:50,160

who lead

1157

00:38:53,430 --> 00:38:52,880

these teams and and who are part of them

1158

00:38:54,790 --> 00:38:53,440

um

1159

00:38:57,510 --> 00:38:54,800

i had you know i didn't have really a

1160

00:38:59,270 --> 00:38:57,520

clue about how to do research in

1161

00:39:00,630 --> 00:38:59,280

in science like look up scientific

1162

00:39:03,990 --> 00:39:00,640

papers and so on so i just

1163

00:39:06,230 --> 00:39:04,000

really went off of websites and i kind

1164

00:39:08,870 --> 00:39:06,240

of started emailing these people

1165

00:39:10,310 --> 00:39:08,880

um and some never answered maybe you

1166

00:39:12,470 --> 00:39:10,320

know the ten percent who did

1167

00:39:14,470 --> 00:39:12,480

kind of pointed me to the next level and

1168

00:39:15,829 --> 00:39:14,480

that's kind of how i got to

1169

00:39:17,190 --> 00:39:15,839

i got to reach out to them i learned

1170

00:39:18,870 --> 00:39:17,200

that there was such a thing as an

1171

00:39:22,150 --> 00:39:18,880

astrobiology science conference

1172

00:39:25,109 --> 00:39:22,160

um at that time i had gotten a small

1173

00:39:26,710 --> 00:39:25,119

um student grant to travel and so i used

1174

00:39:28,150 --> 00:39:26,720

it to go to that conference so it was at

1175

00:39:29,990 --> 00:39:28,160

icon in 2010

1176

00:39:31,990 --> 00:39:30,000

and there it was you know everyone was

1177

00:39:34,310 --> 00:39:32,000

there so i just like

1178

00:39:35,990 --> 00:39:34,320

i i was emailing people you know maybe

1179

00:39:38,310 --> 00:39:36,000

20 20 30 people

1180

00:39:40,390 --> 00:39:38,320

uh and asking to meet them at the breaks

1181

00:39:42,150 --> 00:39:40,400

because i was interested in doing school

1182

00:39:43,109 --> 00:39:42,160

and so on and it's just kind of hard got

1183

00:39:48,950 --> 00:39:43,119

to

1184

00:39:51,030 --> 00:39:48,960

from a short

1185

00:39:55,589 --> 00:39:51,040

informal conversation and that was my

1186

00:39:59,910 --> 00:39:58,069

yeah i i agree with this that you should

1187

00:40:00,630 --> 00:39:59,920

reach out i mean that's kind of how i

1188

00:40:02,390 --> 00:40:00,640

got into

1189

00:40:05,190 --> 00:40:02,400

i mean i just contacted someone who

1190

00:40:06,790 --> 00:40:05,200

called themselves an astrobiologist and

1191

00:40:08,309 --> 00:40:06,800

and i think but i mean the first thing

1192

00:40:11,190 --> 00:40:08,319

you can do is get a good

1193

00:40:13,430 --> 00:40:11,200

like degree in some of the you know

1194

00:40:16,309 --> 00:40:13,440

undergraduate degree master's degree in

1195

00:40:18,470 --> 00:40:16,319

in one of their subjects like biology

1196

00:40:21,030 --> 00:40:18,480

astronomy geology

1197

00:40:23,109 --> 00:40:21,040

which doesn't mean you have to do that

1198

00:40:25,190 --> 00:40:23,119

when you do astrobiology because i did

1199

00:40:26,150 --> 00:40:25,200

you know masters in engineering biology

1200

00:40:29,750 --> 00:40:26,160

and then

1201

00:40:31,030 --> 00:40:29,760

geochemistry when i did my phd so

1202

00:40:33,750 --> 00:40:31,040

there's always the

1203

00:40:35,670 --> 00:40:33,760

which i kind of love about astrobiology

1204

00:40:37,510 --> 00:40:35,680

that you can kind of transfer from one

1205

00:40:40,950 --> 00:40:37,520

subject to another

1206

00:40:42,550 --> 00:40:40,960

and but i mean get some type of a degree

1207

00:40:44,470 --> 00:40:42,560

and then you know contact people

1208

00:40:46,550 --> 00:40:44,480

i mean i have people that are doing high

1209

00:40:48,309 --> 00:40:46,560

school and they ask for projects and

1210

00:40:50,630 --> 00:40:48,319

like try to guide them to like you can

1211

00:40:52,870 --> 00:40:50,640

do this or that then

1212

00:40:54,790 --> 00:40:52,880

i think that's the best way to contact

1213

00:40:56,309 --> 00:40:54,800

people and

1214

00:40:58,309 --> 00:40:56,319

there's always going to be someone who's

1215

00:40:59,750 --> 00:40:58,319

going to help you so

1216

00:41:01,670 --> 00:40:59,760

it's a very good point actually let's

1217

00:41:03,829 --> 00:41:01,680

broaden this out then a little bit

1218

00:41:04,870 --> 00:41:03,839

um so someone who contacted me many

1219

00:41:07,270 --> 00:41:04,880

years ago

1220

00:41:08,870 --> 00:41:07,280

through social media who i first met

1221

00:41:10,230 --> 00:41:08,880

because i helped run the university

1222

00:41:12,950 --> 00:41:10,240

rover challenge

1223

00:41:14,870 --> 00:41:12,960

an undergraduate mars rover competition

1224

00:41:16,550 --> 00:41:14,880

and he was a member of a team from india

1225

00:41:18,309 --> 00:41:16,560

called rudra

1226

00:41:19,910 --> 00:41:18,319

and he reached out to me online and

1227

00:41:21,670 --> 00:41:19,920

started connecting and just asking me

1228

00:41:23,750 --> 00:41:21,680

very simple questions

1229

00:41:25,190 --> 00:41:23,760

and then this summer he ended up working

1230

00:41:26,870 --> 00:41:25,200

for me as an intern

1231

00:41:28,150 --> 00:41:26,880

and now he's a visiting scholar at our

1232

00:41:29,589 --> 00:41:28,160

non-profit working with me doing

1233

00:41:30,309 --> 00:41:29,599

research he's writing a book chapter

1234

00:41:33,670 --> 00:41:30,319

with me

1235

00:41:35,750 --> 00:41:33,680

uh his name is anna root mohanty uh at

1236

00:41:37,270 --> 00:41:35,760

on twitter and he has a question kind of

1237

00:41:38,870 --> 00:41:37,280

in a similar vein so we can open this

1238

00:41:40,069 --> 00:41:38,880

this this undergraduate conversation a

1239

00:41:42,150 --> 00:41:40,079

little bit more yet

1240

00:41:43,990 --> 00:41:42,160

uh honoraroop has asked what do you wish

1241

00:41:46,390 --> 00:41:44,000

you had done differently

1242

00:41:47,510 --> 00:41:46,400

as an undergraduate or what is something

1243

00:41:49,510 --> 00:41:47,520

that undergrads which

1244

00:41:51,109 --> 00:41:49,520

should be doing to become good

1245

00:41:52,870 --> 00:41:51,119

scientists right now

1246

00:41:56,230 --> 00:41:52,880

uh do any of you have any thoughts in

1247

00:42:00,870 --> 00:41:58,790

well i would say what you should be

1248

00:42:03,270 --> 00:42:00,880

doing not should not be doing really

1249

00:42:04,470 --> 00:42:03,280

do watch and sounds cheesy but it's you

1250

00:42:07,270 --> 00:42:04,480

really do what you like

1251

00:42:07,910 --> 00:42:07,280

uh very very frankly don't overthink it

1252

00:42:11,190 --> 00:42:07,920

what is

1253

00:42:14,069 --> 00:42:11,200

best for my curriculum so i will be

1254

00:42:15,030 --> 00:42:14,079

no that's ridiculous just because doing

1255

00:42:16,790 --> 00:42:15,040

something

1256

00:42:18,069 --> 00:42:16,800

is very different from finding the

1257

00:42:19,589 --> 00:42:18,079

question interesting

1258

00:42:21,349 --> 00:42:19,599

you know you might find galaxy

1259

00:42:22,790 --> 00:42:21,359

information really fascinating question

1260

00:42:24,870 --> 00:42:22,800

which we all do but when you're stuck

1261

00:42:26,870 --> 00:42:24,880

with the computer and you know multi

1262

00:42:28,950 --> 00:42:26,880

uh like thousand body simulations which

1263

00:42:31,109 --> 00:42:28,960

are only dots and you only do numerical

1264

00:42:32,309 --> 00:42:31,119

uh you know fitting you might be really

1265

00:42:34,230 --> 00:42:32,319

bored so

1266

00:42:35,430 --> 00:42:34,240

go and explore many different things and

1267

00:42:37,270 --> 00:42:35,440

see what you really enjoy

1268

00:42:39,030 --> 00:42:37,280

doing do you enjoy lab work do you enjoy

1269

00:42:41,829 --> 00:42:39,040

computer work do you enjoy

1270

00:42:43,109 --> 00:42:41,839

doing tech doing you know more you gotta

1271

00:42:44,790 --> 00:42:43,119

figure that out because

1272

00:42:47,030 --> 00:42:44,800

once you're through you're gonna do this

1273

00:42:49,430 --> 00:42:47,040

every day and

1274

00:42:51,030 --> 00:42:49,440

so and of course you'll transition but

1275

00:42:53,430 --> 00:42:51,040

do what you

1276

00:42:55,750 --> 00:42:53,440

find out not just where you're good at

1277

00:42:56,950 --> 00:42:55,760

but what you really enjoy on a daily day

1278

00:42:58,470 --> 00:42:56,960

basis

1279

00:43:00,230 --> 00:42:58,480

and that's i think an important thing to

1280

00:43:03,670 --> 00:43:00,240

be done and then the rest will take care

1281

00:43:06,710 --> 00:43:05,430

yeah i would agree to that and i also

1282

00:43:08,309 --> 00:43:06,720

think that there are a lot of different

1283

00:43:09,750 --> 00:43:08,319

ways of how you can get into the field

1284

00:43:12,150 --> 00:43:09,760

of astrobiology

1285

00:43:13,990 --> 00:43:12,160

and if you start with something that you

1286

00:43:16,069 --> 00:43:14,000

feel comfortable in i think that's much

1287

00:43:16,710 --> 00:43:16,079

more important than having a strategic

1288

00:43:19,030 --> 00:43:16,720

plan

1289

00:43:20,470 --> 00:43:19,040

oh i need to start biogeochemistry i

1290

00:43:22,150 --> 00:43:20,480

actually i don't like biology i don't

1291

00:43:24,230 --> 00:43:22,160

like chemistry but this actually brings

1292

00:43:27,030 --> 00:43:24,240

me to astrobiology in the end

1293

00:43:29,270 --> 00:43:27,040

this is not going to work out but if you

1294

00:43:31,030 --> 00:43:29,280

if you like what you're doing and if you

1295

00:43:33,109 --> 00:43:31,040

as the other said before have the

1296

00:43:34,390 --> 00:43:33,119

connections or build up the connections

1297

00:43:35,910 --> 00:43:34,400

to astrobiologists

1298

00:43:36,090 --> 00:43:35,920

that's i think there's the best way to

1299

00:43:38,309 --> 00:43:36,100

go

1300

00:43:40,870 --> 00:43:38,319

[Music]

1301

00:43:42,550 --> 00:43:40,880

yeah it's very cool yeah i mean i also

1302

00:43:44,470 --> 00:43:42,560

as an undergraduate studied in different

1303

00:43:45,990 --> 00:43:44,480

areas in biology and chemistry and then

1304

00:43:48,390 --> 00:43:46,000

astrophysics and then

1305

00:43:50,550 --> 00:43:48,400

went to geology and it wasn't until my

1306

00:43:51,829 --> 00:43:50,560

phd in geology that i realized i loved

1307

00:43:53,670 --> 00:43:51,839

being out in the field

1308

00:43:55,510 --> 00:43:53,680

and i loved carrying rocks in my

1309

00:43:57,589 --> 00:43:55,520

backpack and i loved being

1310

00:43:59,190 --> 00:43:57,599

outdoors with my science that i wasn't

1311

00:44:00,230 --> 00:43:59,200

really as into the laboratory as i

1312

00:44:01,670 --> 00:44:00,240

thought i was

1313

00:44:03,109 --> 00:44:01,680

uh and so yeah it's very important to

1314

00:44:04,470 --> 00:44:03,119

explore these different things and find

1315

00:44:08,309 --> 00:44:04,480

what really does

1316

00:44:09,589 --> 00:44:08,319

another question

1317

00:44:11,510 --> 00:44:09,599

um that has come into us from an

1318

00:44:14,470 --> 00:44:11,520

anonymous source uh

1319

00:44:15,349 --> 00:44:14,480

is where do you think if there is life

1320

00:44:17,430 --> 00:44:15,359

out there

1321

00:44:18,870 --> 00:44:17,440

where do you think we might most likely

1322

00:44:21,190 --> 00:44:18,880

find alien life

1323

00:44:21,990 --> 00:44:21,200

first and i imagine maybe you each have

1324

00:44:24,069 --> 00:44:22,000

a different opinion

1325

00:44:25,430 --> 00:44:24,079

on this so i'd love to hear it i don't

1326

00:44:28,630 --> 00:44:25,440

know maybe i'm biased

1327

00:44:30,550 --> 00:44:28,640

morse but no but i mean

1328

00:44:31,670 --> 00:44:30,560

i guess with all the resources we're

1329

00:44:34,309 --> 00:44:31,680

putting into mars

1330

00:44:36,230 --> 00:44:34,319

i mean there's a big chance you know i

1331

00:44:38,790 --> 00:44:36,240

mean considering the number of uh

1332

00:44:39,270 --> 00:44:38,800

just missions and now but i mean i don't

1333

00:44:41,349 --> 00:44:39,280

know if

1334

00:44:43,430 --> 00:44:41,359

mars is it depends also are you looking

1335

00:44:46,390 --> 00:44:43,440

for extinct life or extinct life i'm

1336

00:44:47,910 --> 00:44:46,400

assuming we're talking about extent life

1337

00:44:50,150 --> 00:44:47,920

maybe mars is not the

1338

00:44:52,309 --> 00:44:50,160

the right place it might be better with

1339

00:44:53,190 --> 00:44:52,319

the ocean worlds you know around the

1340

00:44:55,349 --> 00:44:53,200

moons

1341

00:44:56,870 --> 00:44:55,359

i don't know i try to when people ask me

1342

00:44:57,750 --> 00:44:56,880

this question i should try to keep an

1343

00:44:59,990 --> 00:44:57,760

open mind

1344

00:45:02,309 --> 00:45:00,000

to keep you know not being said that i'm

1345

00:45:04,069 --> 00:45:02,319

gonna find you know life on mars but

1346

00:45:05,990 --> 00:45:04,079

you know look at the evidence you know

1347

00:45:07,670 --> 00:45:06,000

so fairly agnostic

1348

00:45:09,190 --> 00:45:07,680

yeah how about you mark what do you

1349

00:45:11,430 --> 00:45:09,200

think where might we find alien life

1350

00:45:13,910 --> 00:45:11,440

first if it's out there

1351

00:45:15,190 --> 00:45:13,920

yeah thanks for the segue sandra uh i

1352

00:45:17,430 --> 00:45:15,200

think getting question worlds might be

1353

00:45:20,790 --> 00:45:17,440

the way to go it's my personal bias

1354

00:45:23,270 --> 00:45:20,800

um you know it's always 20 years away uh

1355

00:45:23,910 --> 00:45:23,280

live detection and so um so i'm trying

1356

00:45:25,510 --> 00:45:23,920

to look at

1357

00:45:27,750 --> 00:45:25,520

the most promising places so that

1358

00:45:30,710 --> 00:45:27,760

there's mars i see worlds

1359

00:45:31,430 --> 00:45:30,720

planets in other solar systems and i

1360

00:45:34,870 --> 00:45:31,440

just

1361

00:45:36,390 --> 00:45:34,880

feel like um you know

1362

00:45:38,150 --> 00:45:36,400

these these ocean worlds some of them

1363

00:45:40,550 --> 00:45:38,160

spew some of their oceans

1364

00:45:42,069 --> 00:45:40,560

out into space we call it cryovolcanisms

1365

00:45:42,870 --> 00:45:42,079

like cold volcanism but the magma's

1366

00:45:46,309 --> 00:45:42,880

water

1367

00:45:48,470 --> 00:45:46,319

and so if you know it it makes uh

1368

00:45:49,990 --> 00:45:48,480

pieces of the ocean no droplets that

1369

00:45:51,510 --> 00:45:50,000

that freeze once they go up

1370

00:45:53,829 --> 00:45:51,520

accessible by spacecraft that you don't

1371

00:45:57,190 --> 00:45:53,839

even have to drill down

1372

00:45:57,670 --> 00:45:57,200

um it's a fresh sample uh there's good

1373

00:45:59,510 --> 00:45:57,680

chance

1374

00:46:01,670 --> 00:45:59,520

the oceans have the the ingredients for

1375

00:46:02,390 --> 00:46:01,680

life uh in some cases we only we know it

1376

00:46:05,589 --> 00:46:02,400

already

1377

00:46:07,430 --> 00:46:05,599

um and it's just not not all that hard

1378

00:46:09,589 --> 00:46:07,440

to do in the grand scheme of things

1379

00:46:11,349 --> 00:46:09,599

uh so that's you know if there is life

1380

00:46:14,870 --> 00:46:11,359

there i think we'll we'll know

1381

00:46:15,750 --> 00:46:14,880

in the next 20 years that's me again in

1382

00:46:18,950 --> 00:46:15,760

20 years

1383

00:46:20,870 --> 00:46:18,960

lina

1384

00:46:21,990 --> 00:46:20,880

what do you think is it 20 years away

1385

00:46:24,470 --> 00:46:22,000

and if not

1386

00:46:26,790 --> 00:46:24,480

or if so where might we find alien life

1387

00:46:28,390 --> 00:46:26,800

do you think

1388

00:46:29,990 --> 00:46:28,400

well i guess the question is do you

1389

00:46:33,109 --> 00:46:30,000

really mean find

1390

00:46:36,390 --> 00:46:33,119

a clear proof of life or

1391

00:46:37,430 --> 00:46:36,400

think we may have found life because i

1392

00:46:40,309 --> 00:46:37,440

think for for

1393

00:46:42,069 --> 00:46:40,319

thinking that we may have found life we

1394

00:46:43,990 --> 00:46:42,079

may not even have to wait that

1395

00:46:45,430 --> 00:46:44,000

long but then we should look outside of

1396

00:46:47,589 --> 00:46:45,440

the solar system

1397

00:46:49,750 --> 00:46:47,599

i think with something like james webb

1398

00:46:51,349 --> 00:46:49,760

space telescope coming up uh our chances

1399

00:46:53,910 --> 00:46:51,359

are really strong to good

1400

00:46:55,589 --> 00:46:53,920

very surprising signatures in

1401

00:46:58,790 --> 00:46:55,599

atmospheres of exoplanets that

1402

00:47:00,309 --> 00:46:58,800

we may not be able to explain unless

1403

00:47:02,309 --> 00:47:00,319

there might be life on it

1404

00:47:04,790 --> 00:47:02,319

but i always say as long as it doesn't

1405

00:47:07,910 --> 00:47:04,800

talk to you you don't know it's alive

1406

00:47:09,510 --> 00:47:07,920

so the first proof i think

1407

00:47:11,670 --> 00:47:09,520

like a real proof unless we have

1408

00:47:12,870 --> 00:47:11,680

communication can only be in the solar

1409

00:47:15,030 --> 00:47:12,880

system

1410

00:47:16,309 --> 00:47:15,040

that's a good point yeah very hard you

1411

00:47:18,150 --> 00:47:16,319

know we saw with what

1412

00:47:20,150 --> 00:47:18,160

is currently a debate about whether or

1413

00:47:22,069 --> 00:47:20,160

not there is phosphine on venus

1414

00:47:23,190 --> 00:47:22,079

uh it's also making us question you know

1415

00:47:25,109 --> 00:47:23,200

we consider some

1416

00:47:26,390 --> 00:47:25,119

potential gases to be potential

1417

00:47:27,670 --> 00:47:26,400

biosignatures

1418

00:47:29,109 --> 00:47:27,680

but maybe we'll find them on an

1419

00:47:30,870 --> 00:47:29,119

exoplanet and we won't have any way to

1420

00:47:31,750 --> 00:47:30,880

test whether or not there is a biosphere

1421

00:47:33,190 --> 00:47:31,760

there

1422

00:47:34,950 --> 00:47:33,200

but it is very exciting for james webb

1423

00:47:36,150 --> 00:47:34,960

space telescope and and some of these

1424

00:47:37,750 --> 00:47:36,160

other next generation telescope

1425

00:47:39,829 --> 00:47:37,760

proposals like lavoisier

1426  
00:47:41,190 --> 00:47:39,839  
origin space telescope links there's so

1427  
00:47:42,390 --> 00:47:41,200  
many cool proposals for upcoming

1428  
00:47:45,270 --> 00:47:42,400  
telescopes that

1429  
00:47:46,390 --> 00:47:45,280  
are very exciting uh vlada how about you

1430  
00:47:50,230 --> 00:47:46,400  
where do you think we might find

1431  
00:47:53,190 --> 00:47:50,240  
alien life if it's out there i think

1432  
00:47:54,870 --> 00:47:53,200  
the circle was really nicely closed now

1433  
00:47:57,349 --> 00:47:54,880  
the problem is i think right now

1434  
00:47:59,030 --> 00:47:57,359  
we're still in the phase of uh believing

1435  
00:48:00,710 --> 00:47:59,040  
uh and believe it doesn't fit into

1436  
00:48:01,349 --> 00:48:00,720  
science in any way we need to think

1437  
00:48:03,670 --> 00:48:01,359  
right

1438  
00:48:05,349 --> 00:48:03,680

think mean statistics needs numbers

1439

00:48:06,710 --> 00:48:05,359

let's look at the methane example on

1440

00:48:09,270 --> 00:48:06,720

mars you know

1441

00:48:11,270 --> 00:48:09,280

when i started my phd in 2008 that's the

1442

00:48:12,950 --> 00:48:11,280

first time i got you know

1443

00:48:15,510 --> 00:48:12,960

we started talking about that i was

1444

00:48:16,470 --> 00:48:15,520

aware of it it's now 12 12 years down

1445

00:48:18,470 --> 00:48:16,480

the line

1446

00:48:20,150 --> 00:48:18,480

and we have you know this spikes of

1447

00:48:22,230 --> 00:48:20,160

methane on mars which might be coming

1448

00:48:25,670 --> 00:48:22,240

from the subsurface might be indicating

1449

00:48:27,990 --> 00:48:25,680

aqueous activity or maybe life and

1450

00:48:29,750 --> 00:48:28,000

and look we we have you know great

1451  
00:48:32,870 --> 00:48:29,760  
instruments there we have no clue yet

1452  
00:48:33,430 --> 00:48:32,880  
it's it's purely you know it's it's of

1453  
00:48:36,470 --> 00:48:33,440  
course

1454  
00:48:37,190 --> 00:48:36,480  
it's more uh it's not really science at

1455  
00:48:40,470 --> 00:48:37,200  
the level we

1456  
00:48:42,069 --> 00:48:40,480  
don't have enough data and i'm afraid

1457  
00:48:45,030 --> 00:48:42,079  
that's the whole thing even you know

1458  
00:48:45,589 --> 00:48:45,040  
i did extra planets and then i i felt

1459  
00:48:48,069 --> 00:48:45,599  
like

1460  
00:48:49,030 --> 00:48:48,079  
well because of realizing what's going

1461  
00:48:51,510 --> 00:48:49,040  
on on mars

1462  
00:48:52,870 --> 00:48:51,520  
even when we see interesting features on

1463  
00:48:54,710 --> 00:48:52,880

exoplanets

1464

00:48:56,630 --> 00:48:54,720

will not have the tech and the ability

1465

00:48:57,829 --> 00:48:56,640

to really make something out of it and

1466

00:48:59,510 --> 00:48:57,839

it's you know the media is going to rip

1467

00:49:00,950 --> 00:48:59,520

it in pieces and one point they will

1468

00:49:03,430 --> 00:49:00,960

also be tired and then

1469

00:49:04,549 --> 00:49:03,440

at one point the community will be tired

1470

00:49:07,349 --> 00:49:04,559

and um

1471

00:49:08,390 --> 00:49:07,359

you know i've uh i remember i had in

1472

00:49:11,829 --> 00:49:08,400

2000 and

1473

00:49:13,589 --> 00:49:11,839

damn now two years ago a paper uh on

1474

00:49:15,510 --> 00:49:13,599

and on oxygen brian's and the potential

1475

00:49:17,190 --> 00:49:15,520

of life in mars and made really like

1476

00:49:19,349 --> 00:49:17,200

a lot of you know news all over the

1477

00:49:20,870 --> 00:49:19,359

world but i remember only one person

1478

00:49:21,829 --> 00:49:20,880

which i really liked a comment and it

1479

00:49:25,030 --> 00:49:21,839

was somebody

1480

00:49:28,390 --> 00:49:25,040

a a newspaper in india that wrote down

1481

00:49:30,870 --> 00:49:28,400

i'm done with nasa uh i'm so bored by

1482

00:49:32,790 --> 00:49:30,880

what people are telling us that if maybe

1483

00:49:35,349 --> 00:49:32,800

is maybe some kind of life

1484

00:49:37,270 --> 00:49:35,359

i will not listen to anything they tell

1485

00:49:39,750 --> 00:49:37,280

us until they really have not found it

1486

00:49:41,109 --> 00:49:39,760

i'm done and i love that and i kept that

1487

00:49:43,430 --> 00:49:41,119

article because

1488

00:49:44,710 --> 00:49:43,440

it really actually conveyed the message

1489

00:49:47,990 --> 00:49:44,720

um we

1490

00:49:49,910 --> 00:49:48,000

as scientists need to look not

1491

00:49:52,150 --> 00:49:49,920

you know as much as 20 years in the

1492

00:49:54,630 --> 00:49:52,160

future always 30 years in the future

1493

00:49:55,589 --> 00:49:54,640

we have to have more data so i

1494

00:49:57,829 --> 00:49:55,599

personally think

1495

00:49:59,109 --> 00:49:57,839

the subsurface of mars is a very good

1496

00:50:01,510 --> 00:49:59,119

place for life

1497

00:50:02,870 --> 00:50:01,520

signs of life to exist still today so

1498

00:50:04,950 --> 00:50:02,880

life to exist today

1499

00:50:06,309 --> 00:50:04,960

i think that the subsurface of mars has

1500

00:50:08,790 --> 00:50:06,319

been also the best place

1501

00:50:10,549 --> 00:50:08,800

in the past so even if we find no

1502

00:50:11,109 --> 00:50:10,559

science on the surface what we focus

1503

00:50:13,670 --> 00:50:11,119

right now

1504

00:50:15,589 --> 00:50:13,680

doesn't mean anything uh we might be

1505

00:50:20,230 --> 00:50:15,599

just looking at the wrong spots

1506

00:50:23,190 --> 00:50:20,240

um and ocean worlds wow amazing as well

1507

00:50:25,109 --> 00:50:23,200

the realm of exoplanets but again if you

1508

00:50:26,630 --> 00:50:25,119

want to do science the only thing to do

1509

00:50:28,470 --> 00:50:26,640

that the only way to do that is

1510

00:50:30,950 --> 00:50:28,480

that we don't wait always 20 years in

1511

00:50:32,950 --> 00:50:30,960

the future that we don't get

1512

00:50:35,030 --> 00:50:32,960

always you know our dream mission and

1513

00:50:37,030 --> 00:50:35,040

then we cut it by 90

1514

00:50:38,710 --> 00:50:37,040

because that's what the budget allows

1515

00:50:40,470 --> 00:50:38,720

and we as scientists know the

1516

00:50:41,910 --> 00:50:40,480

instruments we're sending will not

1517

00:50:43,750 --> 00:50:41,920

really allow us to have

1518

00:50:45,349 --> 00:50:43,760

anything more than oh maybe there is

1519

00:50:49,270 --> 00:50:45,359

something interesting

1520

00:50:52,150 --> 00:50:49,280

um so you know unless we don't wanna

1521

00:50:52,470 --> 00:50:52,160

wait for always 20 years in the future

1522

00:50:54,870 --> 00:50:52,480

uh

1523

00:50:56,710 --> 00:50:54,880

we really gotta spice up our game with

1524

00:50:59,589 --> 00:50:56,720

international collaborations

1525

00:51:00,549 --> 00:50:59,599

uh with you know private companies uh

1526

00:51:03,829 --> 00:51:00,559

with getting

1527

00:51:05,589 --> 00:51:03,839

things out there much faster otherwise

1528

00:51:07,109 --> 00:51:05,599

you know in 40 years from now we'll have

1529

00:51:08,470 --> 00:51:07,119

an upgrade con session again and

1530

00:51:10,470 --> 00:51:08,480

you ask the same question and it's going

1531

00:51:11,349 --> 00:51:10,480

to be the same answer what do you

1532

00:51:13,750 --> 00:51:11,359

believe

1533

00:51:15,750 --> 00:51:13,760

and not what are you certain about and i

1534

00:51:17,349 --> 00:51:15,760

want to be certain about those things

1535

00:51:19,030 --> 00:51:17,359

yeah it's very powerful it kind of

1536

00:51:21,670 --> 00:51:19,040

reminds me a little bit of

1537

00:51:22,870 --> 00:51:21,680

exploration of mars as well uh you know

1538

00:51:24,390 --> 00:51:22,880

it's always 20 years out that we're

1539

00:51:26,549 --> 00:51:24,400

gonna send humans to mars

1540

00:51:28,630 --> 00:51:26,559

and i remember as a kid i went to space

1541

00:51:30,069 --> 00:51:28,640

camp in the 1990s

1542

00:51:31,589 --> 00:51:30,079

and i remember being told that like my

1543

00:51:32,790 --> 00:51:31,599

generation would be the first ones when

1544

00:51:33,910 --> 00:51:32,800

i was 30 years old

1545

00:51:35,670 --> 00:51:33,920

i would be one of the first ones to go

1546

00:51:37,190 --> 00:51:35,680

to mars and then i remember as an

1547

00:51:38,549 --> 00:51:37,200

undergraduate i was communicating

1548

00:51:39,670 --> 00:51:38,559

science and i would tell children the

1549

00:51:42,549 --> 00:51:39,680

same thing in 20 years

1550

00:51:44,150 --> 00:51:42,559

we going to mars and and now to this day

1551

00:51:45,030 --> 00:51:44,160

i still hear some people saying that in

1552

00:51:47,349 --> 00:51:45,040

20 years

1553

00:51:48,950 --> 00:51:47,359

we'll be going to mars uh and it's kind

1554

00:51:51,030 --> 00:51:48,960

of sad it's always

1555

00:51:54,150 --> 00:51:51,040

it's always 20 years until more summer

1556

00:51:57,510 --> 00:51:56,470

but i actually now it's only 10 years

1557

00:52:01,270 --> 00:51:57,520

actually

1558

00:52:04,069 --> 00:52:01,280

yeah so there is some progress so

1559

00:52:06,150 --> 00:52:04,079

celebration started ordering the 80s so

1560

00:52:07,990 --> 00:52:06,160

actually there was in the early 80s was

1561

00:52:09,030 --> 00:52:08,000

the formation of the first new mars

1562

00:52:10,710 --> 00:52:09,040

underground

1563

00:52:12,470 --> 00:52:10,720

which was against the space shuttle

1564

00:52:14,470 --> 00:52:12,480

program to finally start getting more

1565

00:52:17,589 --> 00:52:14,480

suns that's 40 years ago

1566

00:52:19,430 --> 00:52:17,599

40 years ago so things happen but i just

1567

00:52:20,150 --> 00:52:19,440

like to say one thing that's what comes

1568

00:52:23,030 --> 00:52:20,160

in you know

1569

00:52:23,910 --> 00:52:23,040

i was just doing only basic science and

1570

00:52:46,309 --> 00:52:23,920

i

1571

00:52:48,150 --> 00:52:46,319

another

1572

00:52:50,069 --> 00:52:48,160

uh solar system or extra planetary

1573

00:52:51,910 --> 00:52:50,079

object is beautiful it might be right

1574

00:52:53,990 --> 00:52:51,920

but we don't have the data to validate

1575

00:52:54,630 --> 00:52:54,000

it and until it's there it's philosophy

1576

00:52:56,950 --> 00:52:54,640

it's it's

1577

00:52:57,990 --> 00:52:56,960

a possibility but there's nothing to

1578

00:53:00,790 --> 00:52:58,000

back it up in that

1579

00:53:01,750 --> 00:53:00,800

strong context and i joined jpl nasa

1580

00:53:04,549 --> 00:53:01,760

because i realized

1581

00:53:05,990 --> 00:53:04,559

we need to have data and missions to

1582

00:53:08,870 --> 00:53:06,000

really get that

1583

00:53:10,470 --> 00:53:08,880

and i've now joined blue origin because

1584

00:53:11,589 --> 00:53:10,480

ultimately and that's something for the

1585

00:53:14,390 --> 00:53:11,599

community out there

1586

00:53:15,430 --> 00:53:14,400

that's what you know nothing technology

1587

00:53:17,990 --> 00:53:15,440

is not really

1588

00:53:19,510 --> 00:53:18,000

our human brains are not limiting us we

1589

00:53:22,630 --> 00:53:19,520

can create technology

1590

00:53:24,069 --> 00:53:22,640

today that will allow us to go to all

1591

00:53:27,190 --> 00:53:24,079

those solar system objects

1592

00:53:29,349 --> 00:53:27,200

and do all the experiments we want to do

1593

00:53:31,430 --> 00:53:29,359

we have also technology that will allow

1594

00:53:33,750 --> 00:53:31,440

us to you know send humans to the moon

1595

00:53:36,549 --> 00:53:33,760

and live there and explore there

1596

00:53:37,589 --> 00:53:36,559

it's not that it's the policies the

1597

00:53:40,630 --> 00:53:37,599

politics

1598

00:53:42,069 --> 00:53:40,640

the money and until we haven't changed

1599

00:53:44,630 --> 00:53:42,079

that dogma

1600

00:53:45,990 --> 00:53:44,640

that you know that we as a human

1601  
00:53:48,470 --> 00:53:46,000  
federation can go

1602  
00:53:49,430 --> 00:53:48,480  
and really do together faster and and

1603  
00:53:51,510 --> 00:53:49,440  
more frequent

1604  
00:53:52,790 --> 00:53:51,520  
we'll be always stuck in that we're

1605  
00:53:56,630 --> 00:53:52,800  
chained by

1606  
00:53:59,030 --> 00:53:56,640  
a human concept not by our minds

1607  
00:54:01,270 --> 00:53:59,040  
yeah it seems like you know we we as

1608  
00:54:03,030 --> 00:54:01,280  
scientists especially in astrobiology

1609  
00:54:04,790 --> 00:54:03,040  
have had to persevere through this lack

1610  
00:54:06,470 --> 00:54:04,800  
of support in some places

1611  
00:54:07,510 --> 00:54:06,480  
uh and things like you know building our

1612  
00:54:08,790 --> 00:54:07,520  
networks and getting out there and

1613  
00:54:09,750 --> 00:54:08,800

speaking to people and communicating

1614

00:54:11,430 --> 00:54:09,760

this with people

1615

00:54:13,349 --> 00:54:11,440

it helps us to build some support we

1616

00:54:15,430 --> 00:54:13,359

definitely need more of that

1617

00:54:16,470 --> 00:54:15,440

uh and that that kind of then you know

1618

00:54:18,230 --> 00:54:16,480

for those of us who

1619

00:54:19,750 --> 00:54:18,240

have been early career scientists in the

1620

00:54:21,030 --> 00:54:19,760

near past uh

1621

00:54:22,630 --> 00:54:21,040

kind of understand what it's like for

1622

00:54:23,990 --> 00:54:22,640

these early career scientists who want

1623

00:54:26,390 --> 00:54:24,000

to be involved in answering those

1624

00:54:27,750 --> 00:54:26,400

questions but don't have the data so we

1625

00:54:29,750 --> 00:54:27,760

have another question from sarah that

1626  
00:54:32,150 --> 00:54:29,760  
i'd like to ask of all of you

1627  
00:54:34,069 --> 00:54:32,160  
she wants to know what would you want

1628  
00:54:36,549 --> 00:54:34,079  
early career scientists to know

1629  
00:54:38,069 --> 00:54:36,559  
about failure and finding out how to

1630  
00:54:40,390 --> 00:54:38,079  
persevere through failure

1631  
00:54:41,910 --> 00:54:40,400  
and to stay motivated and i imagine

1632  
00:54:42,630 --> 00:54:41,920  
she's speaking primarily to career

1633  
00:54:44,470 --> 00:54:42,640  
failure but

1634  
00:54:46,230 --> 00:54:44,480  
there's all kinds of other other issues

1635  
00:54:47,990 --> 00:54:46,240  
with failure and these these these

1636  
00:54:49,270 --> 00:54:48,000  
roadblocks these gatekeepers and things

1637  
00:54:51,829 --> 00:54:49,280  
that are holding us back

1638  
00:54:52,630 --> 00:54:51,839

from doing what we want to do uh so mark

1639

00:54:54,470 --> 00:54:52,640

how about you what

1640

00:54:56,470 --> 00:54:54,480

what do you think um about the

1641

00:54:58,549 --> 00:54:56,480

importance of finding perseverance uh

1642

00:55:01,510 --> 00:54:58,559

and staying motivated through failure

1643

00:55:02,549 --> 00:55:01,520

yeah so i'm very much convinced that as

1644

00:55:05,589 --> 00:55:02,559

scientists we're

1645

00:55:08,710 --> 00:55:05,599

we're kind of like uh athletes or uh

1646

00:55:10,390 --> 00:55:08,720

or artists it's like all the all the

1647

00:55:11,430 --> 00:55:10,400

glories on you but all the failures on

1648

00:55:13,190 --> 00:55:11,440

you as well

1649

00:55:14,950 --> 00:55:13,200

and um and you're very independent in

1650

00:55:17,109 --> 00:55:14,960

what you do and you kind of have to rely

1651  
00:55:18,549 --> 00:55:17,119  
on you on yourself mostly and you can

1652  
00:55:20,390 --> 00:55:18,559  
team up with people but

1653  
00:55:22,309 --> 00:55:20,400  
eventually it's not like you're you're

1654  
00:55:23,750 --> 00:55:22,319  
part of a corporation or something

1655  
00:55:26,789 --> 00:55:23,760  
so it has it has rewards and it has

1656  
00:55:30,470 --> 00:55:26,799  
risks um

1657  
00:55:31,990 --> 00:55:30,480  
it you know uh 99

1658  
00:55:33,670 --> 00:55:32,000  
of the of the singers are there out

1659  
00:55:34,309 --> 00:55:33,680  
there trying to do you know cover songs

1660  
00:55:36,230 --> 00:55:34,319  
and get out

1661  
00:55:38,069 --> 00:55:36,240  
on youtube and so on and and they don't

1662  
00:55:40,630 --> 00:55:38,079  
really and like this only

1663  
00:55:43,270 --> 00:55:40,640

one percent is a is a superstar that

1664

00:55:45,109 --> 00:55:43,280

breaks out and and only a very small

1665

00:55:47,589 --> 00:55:45,119

amount of athletes you know go to the

1666

00:55:49,990 --> 00:55:47,599

olympics and get medals and so on

1667

00:55:50,710 --> 00:55:50,000

and uh and and what about all the others

1668

00:55:53,990 --> 00:55:50,720

right

1669

00:55:56,150 --> 00:55:54,000

um so i feel very fortunate to just be

1670

00:55:58,150 --> 00:55:56,160

part like be able to do this i mean

1671

00:56:01,190 --> 00:55:58,160

people are paying you

1672

00:56:02,870 --> 00:56:01,200

to do something super interesting and uh

1673

00:56:04,390 --> 00:56:02,880

you know and and

1674

00:56:05,990 --> 00:56:04,400

most of the time your son won't make it

1675

00:56:06,870 --> 00:56:06,000

to the top 40 and most of your time you

1676

00:56:10,390 --> 00:56:06,880

will you will finish

1677

00:56:11,670 --> 00:56:10,400

295 fifth person in the race uh and same

1678

00:56:13,430 --> 00:56:11,680

thing in science your papers will get

1679

00:56:15,349 --> 00:56:13,440

rejected your proposals won't go through

1680

00:56:16,789 --> 00:56:15,359

you get i got declined for like 40 jobs

1681

00:56:19,670 --> 00:56:16,799

before i got this one

1682

00:56:21,030 --> 00:56:19,680

um the the key is just to to not really

1683

00:56:24,150 --> 00:56:21,040

focus on this but just

1684

00:56:26,549 --> 00:56:24,160

focus on on on where you are

1685

00:56:28,710 --> 00:56:26,559

and what's enabling you to to do this

1686

00:56:30,069 --> 00:56:28,720

and what let us said earlier about

1687

00:56:32,150 --> 00:56:30,079

really loving what you do and the

1688

00:56:35,910 --> 00:56:32,160

methods you use on a daily basis to do

1689

00:56:37,270 --> 00:56:35,920

it is key to to get through that

1690

00:56:39,349 --> 00:56:37,280

sandra how about you what what do you

1691

00:56:40,710 --> 00:56:39,359

think what you would say to to early

1692

00:56:43,109 --> 00:56:40,720

career scientists not just graduate

1693

00:56:44,549 --> 00:56:43,119

students but undergraduates postdocs

1694

00:56:46,309 --> 00:56:44,559

how do they persevere in the face of

1695

00:56:48,390 --> 00:56:46,319

failure well

1696

00:56:50,150 --> 00:56:48,400

considering i today got a proposal

1697

00:56:52,870 --> 00:56:50,160

rejected so

1698

00:56:53,750 --> 00:56:52,880

i'm kind of dealing with it today so

1699

00:56:55,589 --> 00:56:53,760

well you know

1700

00:56:57,270 --> 00:56:55,599

it's kind of like you have to prepare

1701

00:56:58,150 --> 00:56:57,280

you have to realize it's really hard to

1702

00:57:00,950 --> 00:56:58,160

get it and

1703

00:57:03,190 --> 00:57:00,960

uh and even when you're like your

1704

00:57:04,710 --> 00:57:03,200

proposal is you know rejected or your

1705

00:57:07,349 --> 00:57:04,720

manuscript is

1706

00:57:09,190 --> 00:57:07,359

you know rejected you always learn

1707

00:57:11,270 --> 00:57:09,200

something right you always

1708

00:57:13,510 --> 00:57:11,280

you should take the criticism and you

1709

00:57:15,349 --> 00:57:13,520

know sometimes it's valid and sometimes

1710

00:57:17,910 --> 00:57:15,359

it's not valid and you can always i mean

1711

00:57:20,150 --> 00:57:17,920

i had proposer rejected and then i just

1712

00:57:20,950 --> 00:57:20,160

you know rewrite them a bit and next

1713

00:57:23,829 --> 00:57:20,960

year they're

1714

00:57:25,750 --> 00:57:23,839

funded so i mean you have to kind of

1715

00:57:27,109 --> 00:57:25,760

expect this this is kind of part of the

1716

00:57:29,349 --> 00:57:27,119

game

1717

00:57:31,270 --> 00:57:29,359

but at the same time i i kind of also

1718

00:57:31,670 --> 00:57:31,280

feel honored that i get to work with

1719

00:57:33,510 --> 00:57:31,680

this

1720

00:57:35,670 --> 00:57:33,520

you know that actually someone is paying

1721

00:57:39,030 --> 00:57:35,680

me to do this you know so

1722

00:57:40,230 --> 00:57:39,040

and i get to you know take part a very

1723

00:57:42,390 --> 00:57:40,240

important decisions

1724

00:57:44,069 --> 00:57:42,400

you know like which samples do you bring

1725

00:57:47,030 --> 00:57:44,079

back from mars you know like this

1726  
00:57:48,390 --> 00:57:47,040  
and i feel honored about this so i think

1727  
00:57:51,510 --> 00:57:48,400  
you have to

1728  
00:57:55,510 --> 00:57:51,520  
good things and

1729  
00:57:57,510 --> 00:57:55,520  
and not get stuck in the bad things

1730  
00:57:59,109 --> 00:57:57,520  
even though i mean but you learn from

1731  
00:58:02,789 --> 00:57:59,119  
those i don't know like

1732  
00:58:03,990 --> 00:58:02,799  
this is what i do so yeah and then

1733  
00:58:05,910 --> 00:58:04,000  
it's good yeah you know you have to

1734  
00:58:06,630 --> 00:58:05,920  
learn how to persevere through those bad

1735  
00:58:07,990 --> 00:58:06,640  
things and

1736  
00:58:09,510 --> 00:58:08,000  
i think we get better and better at it

1737  
00:58:11,349 --> 00:58:09,520  
as we go along you know i remember my

1738  
00:58:12,789 --> 00:58:11,359

very first paper i submitted that

1739

00:58:14,230 --> 00:58:12,799

you know people are just destroyed and i

1740

00:58:15,510 --> 00:58:14,240

was like oh i'm going to be a failure

1741

00:58:17,670 --> 00:58:15,520

the rest of my life and

1742

00:58:19,190 --> 00:58:17,680

you learn you know better vlada how

1743

00:58:20,150 --> 00:58:19,200

about you what do you think about this

1744

00:58:21,829 --> 00:58:20,160

issue with

1745

00:58:24,309 --> 00:58:21,839

with early career scientists having to

1746

00:58:26,069 --> 00:58:24,319

learn perseverance through failure

1747

00:58:27,670 --> 00:58:26,079

i would say we should all encourage each

1748

00:58:29,589 --> 00:58:27,680

other to fail

1749

00:58:31,510 --> 00:58:29,599

uh you know that's one thing which is

1750

00:58:33,510 --> 00:58:31,520

problematic in our society today we

1751

00:58:35,589 --> 00:58:33,520

we don't give ourselves the freedom to

1752

00:58:38,789 --> 00:58:35,599

fail many times you know

1753

00:58:41,270 --> 00:58:38,799

um i think in science you do

1754

00:58:43,109 --> 00:58:41,280

some scientific work and later data or

1755

00:58:46,549 --> 00:58:43,119

later work will show that it's wrong

1756

00:58:47,349 --> 00:58:46,559

and that's okay it's good you you learn

1757

00:58:49,589 --> 00:58:47,359

something

1758

00:58:51,910 --> 00:58:49,599

and only if we you know allow each other

1759

00:58:52,950 --> 00:58:51,920

to fail make mistakes only then can we

1760

00:58:55,750 --> 00:58:52,960

really

1761

00:58:57,190 --> 00:58:55,760

feel better and enjoy our work more and

1762

00:58:59,270 --> 00:58:57,200

do better work

1763

00:59:00,230 --> 00:58:59,280

um we you know it's really part of the

1764

00:59:03,270 --> 00:59:00,240

process you know

1765

00:59:04,069 --> 00:59:03,280

i do not you know think of a life of

1766

00:59:06,549 --> 00:59:04,079

brian

1767

00:59:07,990 --> 00:59:06,559

it was even after my time but showing

1768

00:59:09,510 --> 00:59:08,000

that we are older it's a movie

1769

00:59:11,910 --> 00:59:09,520

you know always look on the bright side

1770

00:59:13,510 --> 00:59:11,920

of life failure is a challenge it's

1771

00:59:15,030 --> 00:59:13,520

something to learn something to grow and

1772

00:59:18,069 --> 00:59:15,040

it's beautiful

1773

00:59:21,510 --> 00:59:18,079

um and i think just just

1774

00:59:24,390 --> 00:59:21,520

laugh about it move on and learn

1775

00:59:25,510 --> 00:59:24,400

and don't be afraid don't be worried and

1776

00:59:28,549 --> 00:59:25,520

encourage yourself

1777

00:59:31,270 --> 00:59:28,559

and others to fail it's part of the game

1778

00:59:31,670 --> 00:59:31,280

and it's good yeah yeah that's great i

1779

00:59:32,950 --> 00:59:31,680

mean

1780

00:59:34,870 --> 00:59:32,960

everything we do in life we have to

1781

00:59:36,710 --> 00:59:34,880

learn how to accept those failures

1782

00:59:38,150 --> 00:59:36,720

uh lena i'll give you then the final

1783

00:59:40,630 --> 00:59:38,160

words here as we're going to wrap here

1784

00:59:42,710 --> 00:59:40,640

soon uh what do you think about this and

1785

00:59:45,030 --> 00:59:42,720

feel free to add any any last bit of

1786

00:59:46,630 --> 00:59:45,040

advice as well

1787

00:59:48,230 --> 00:59:46,640

yeah i also fully agree that you you

1788

00:59:51,349 --> 00:59:48,240

have to fail sometimes

1789

00:59:51,750 --> 00:59:51,359

and i remember one of one paper of mine

1790

00:59:53,430 --> 00:59:51,760

got

1791

00:59:54,950 --> 00:59:53,440

accepted with the next three weeks it

1792

00:59:55,750 --> 00:59:54,960

was the fastest paper i ever got

1793

00:59:57,910 --> 00:59:55,760

accepted

1794

00:59:58,950 --> 00:59:57,920

this is really by now the worst paper

1795

01:00:00,549 --> 00:59:58,960

i've ever written

1796

01:00:03,030 --> 01:00:00,559

if i look at it i'm always ashamed

1797

01:00:05,030 --> 01:00:03,040

because you see the failures of being

1798

01:00:06,950 --> 01:00:05,040

rejected so being criticized

1799

01:00:08,309 --> 01:00:06,960

was missing because the riviera was too

1800

01:00:09,910 --> 01:00:08,319

too lazy i don't know

1801

01:00:11,750 --> 01:00:09,920

it's really it's not the worst player

1802

01:00:15,030 --> 01:00:11,760

i've ever written um

1803

01:00:17,109 --> 01:00:15,040

for me actually as a graduate student

1804

01:00:19,270 --> 01:00:17,119

also later as a phd student postdoc it

1805

01:00:19,829 --> 01:00:19,280

was really important for me to realize

1806

01:00:22,630 --> 01:00:19,839

that

1807

01:00:24,710 --> 01:00:22,640

everyone in science has failures to cope

1808

01:00:26,710 --> 01:00:24,720

with and even if you're

1809

01:00:28,069 --> 01:00:26,720

talking this with the boss of your boss

1810

01:00:30,470 --> 01:00:28,079

of your institute

1811

01:00:32,630 --> 01:00:30,480

everyone has papers rejected everyone

1812

01:00:34,710 --> 01:00:32,640

has purpose is rejected so it's really

1813

01:00:36,870 --> 01:00:34,720

it's it's a normal way of assigned

1814

01:00:38,390 --> 01:00:36,880

science life in a way

1815

01:00:40,710 --> 01:00:38,400

and i think this is really important to

1816

01:00:41,990 --> 01:00:40,720

keep in mind people typically tend not

1817

01:00:44,309 --> 01:00:42,000

to talk about the failures

1818

01:00:45,030 --> 01:00:44,319

but i think we should talk much more

1819

01:00:47,750 --> 01:00:45,040

about

1820

01:00:49,430 --> 01:00:47,760

how things did not work out because it

1821

01:00:51,270 --> 01:00:49,440

happens for everyone

1822

01:00:52,950 --> 01:00:51,280

yeah absolutely well this has been a

1823

01:00:54,950 --> 01:00:52,960

very fun conversation all of you

1824

01:00:57,349 --> 01:00:54,960

thank you so much all four of you for

1825

01:00:58,710 --> 01:00:57,359

joining us for ask an astrobiologist

1826

01:01:00,789 --> 01:00:58,720

i really appreciate your time and having

1827

01:01:02,390 --> 01:01:00,799

you here with us today and thanks as

1828

01:01:03,430 --> 01:01:02,400

always to our audience for watching and

1829

01:01:05,510 --> 01:01:03,440

joining us

1830

01:01:06,710 --> 01:01:05,520

uh for our call to action this month for

1831

01:01:08,950 --> 01:01:06,720

this episode

1832

01:01:12,230 --> 01:01:08,960

uh if you want to learn more about ab

1833

01:01:14,710 --> 01:01:12,240

grad con go and check out [appgradcom.org](http://appgradcom.org)

1834

01:01:16,870 --> 01:01:14,720

if you are an early career scientist uh

1835

01:01:18,789 --> 01:01:16,880

feel free to register for next year

1836

01:01:20,789 --> 01:01:18,799

the 14th through 17th of september in

1837

01:01:23,030 --> 01:01:20,799

tokyo japan

1838

01:01:25,670 --> 01:01:23,040

also if you want to learn more about the

1839

01:01:27,829 --> 01:01:25,680

past and what's gone on with abradcon

1840

01:01:29,190 --> 01:01:27,839

if you go to the nasa astrobiology

1841

01:01:32,549 --> 01:01:29,200

youtube channel

1842

01:01:35,430 --> 01:01:32,559

it's youtube.com nasa astrobiology

1843

01:01:37,430 --> 01:01:35,440

you can find playlists that archive all

1844

01:01:38,069 --> 01:01:37,440

of the talks and all of the science

1845

01:01:40,069 --> 01:01:38,079

communication

1846

01:01:42,150 --> 01:01:40,079

endeavors all of the cool events that

1847

01:01:44,789 --> 01:01:42,160

we've had at the appgrad cons

1848

01:01:46,150 --> 01:01:44,799

over these last many years uh it's a

1849

01:01:49,430 --> 01:01:46,160

great place to go

1850

01:01:50,630 --> 01:01:49,440

and check out and then finally uh if any

1851  
01:01:51,990 --> 01:01:50,640  
of you want to stay in the loop on

1852  
01:01:53,430 --> 01:01:52,000  
upcoming episodes of ask an

1853  
01:01:55,270 --> 01:01:53,440  
astrobiologist

1854  
01:01:57,510 --> 01:01:55,280  
find out more about opportunities

1855  
01:02:00,470 --> 01:01:57,520  
especially for early career scientists

1856  
01:02:02,390 --> 01:02:00,480  
from nasa astrobiology then the producer

1857  
01:02:04,710 --> 01:02:02,400  
and director of ask and astrobiologist

1858  
01:02:06,390 --> 01:02:04,720  
mike toyon is going to pop up the link

1859  
01:02:08,549 --> 01:02:06,400  
for signing up uh

1860  
01:02:09,990 --> 01:02:08,559  
for our email list so that you can join

1861  
01:02:11,109 --> 01:02:10,000  
us and know about when all these things

1862  
01:02:13,190 --> 01:02:11,119  
are going on

1863  
01:02:14,829 --> 01:02:13,200

uh as always keep an eye out on all

1864

01:02:16,069 --> 01:02:14,839

social media and websites for

1865

01:02:18,309 --> 01:02:16,079

secondnet.org

1866

01:02:20,390 --> 01:02:18,319

at saginworld on twitter at nasa

1867

01:02:22,710 --> 01:02:20,400

astrobio on twitter if you'd like to

1868

01:02:23,510 --> 01:02:22,720

talk to me i'm at casmobiologist on

1869

01:02:25,190 --> 01:02:23,520

twitter

1870

01:02:26,870 --> 01:02:25,200

once again to all four of our guests

1871

01:02:28,789 --> 01:02:26,880

thank you so much for your time

1872

01:02:30,630 --> 01:02:28,799

and to our audience thanks for joining

1873

01:02:37,170 --> 01:02:30,640

and remember until next time