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The Environment as a Driving Force in the Coevolution of Ferredoxin Termini

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1
00:00:03,350 --> 00:00:02,070
hello my name is julianna giacomo with

2
00:00:04,630 --> 00:00:03,360
rutgers university

3
00:00:06,230 --> 00:00:04,640
and i'm going to be discussing the

4
00:00:08,470 --> 00:00:06,240
environment as a driving force in the

5
00:00:11,270 --> 00:00:08,480
co-evolution of paradox and termini

6
00:00:13,030 --> 00:00:11,280
very briefly uh the study begins to

7
00:00:14,709 --> 00:00:13,040
specify the evolutionary factors of

8
00:00:16,630 --> 00:00:14,719
life's earliest proteins capable of

9
00:00:17,590 --> 00:00:16,640
redox reactions which are octa

10
00:00:19,109 --> 00:00:17,600
reductases

11
00:00:20,630 --> 00:00:19,119
these proteins are so diverse it has

12
00:00:21,750 --> 00:00:20,640
only reasonably been determined that

13
00:00:23,910 --> 00:00:21,760

they are polypheletic

14
00:00:26,310 --> 00:00:23,920
where 50 of all metal containing

15
00:00:28,710 --> 00:00:26,320
osteoductases have a single origin

16
00:00:30,150 --> 00:00:28,720
from a protein fold represented by

17
00:00:31,830 --> 00:00:30,160
accident ferrydoxins

18
00:00:33,750 --> 00:00:31,840
therefore the study of the origin of

19
00:00:36,870 --> 00:00:33,760
ferrydoxin serves as a proxy

20
00:00:38,950 --> 00:00:36,880
for the origin of oxo reductases in

21
00:00:39,910 --> 00:00:38,960
order to address this we split paradox

22
00:00:41,990 --> 00:00:39,920
and sequences

23
00:00:43,830 --> 00:00:42,000
from methanic archaea in half and

24
00:00:46,310 --> 00:00:43,840
created phylogenetic trees overlaid with

25
00:00:47,990 --> 00:00:46,320
optimal growth temperature and ph

26
00:00:49,590 --> 00:00:48,000
the real takeaway from this study is

27
00:00:51,189 --> 00:00:49,600
that each half of ferrodoxin likely

28
00:00:53,110 --> 00:00:51,199
co-evolved independently

29
00:00:54,709 --> 00:00:53,120
where temperature was one of the driving

30
00:00:56,950 --> 00:00:54,719
factors for residue change in each

31
00:00:58,790 --> 00:00:56,960
terminus and ph was not

32
00:01:01,029 --> 00:00:58,800
and these factors can therefore be