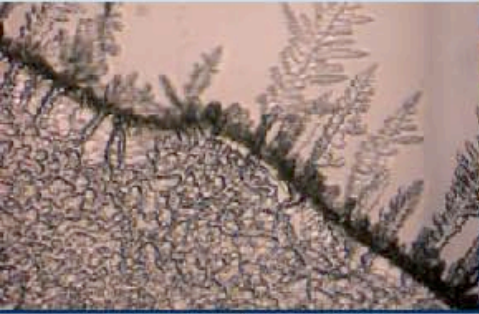
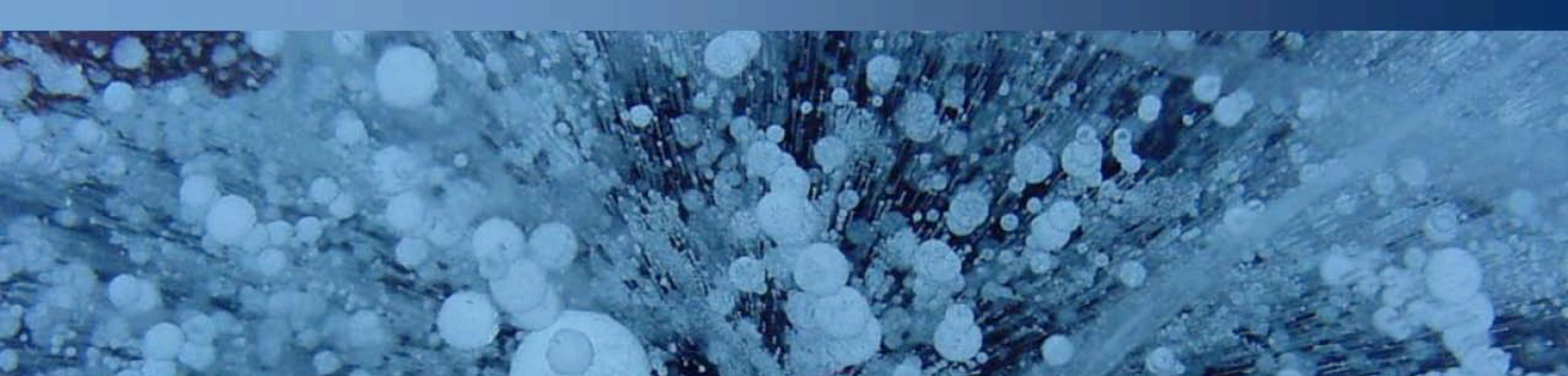


Life in Icy Environments

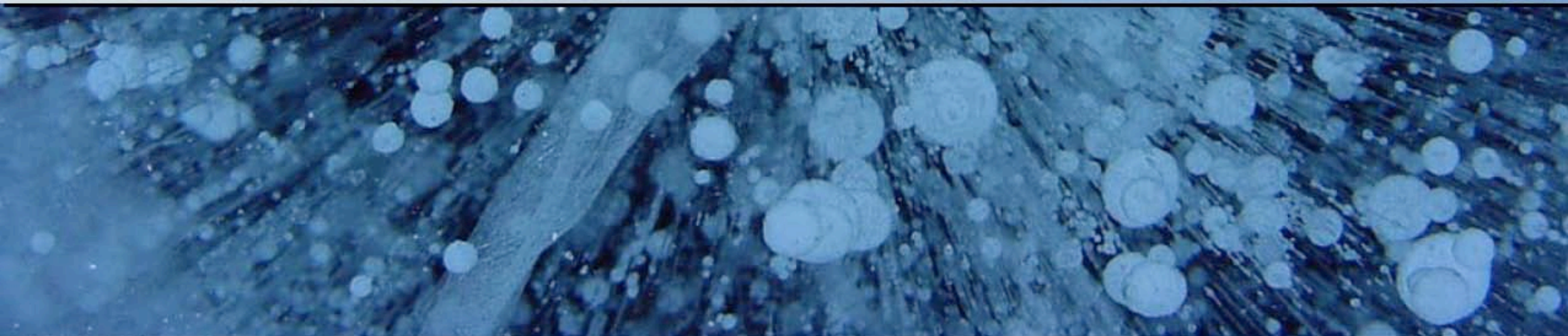
Christine M. Foreman, Ph.D.
Montana State University
cforeman@montana.edu

Biota in polar regions are special

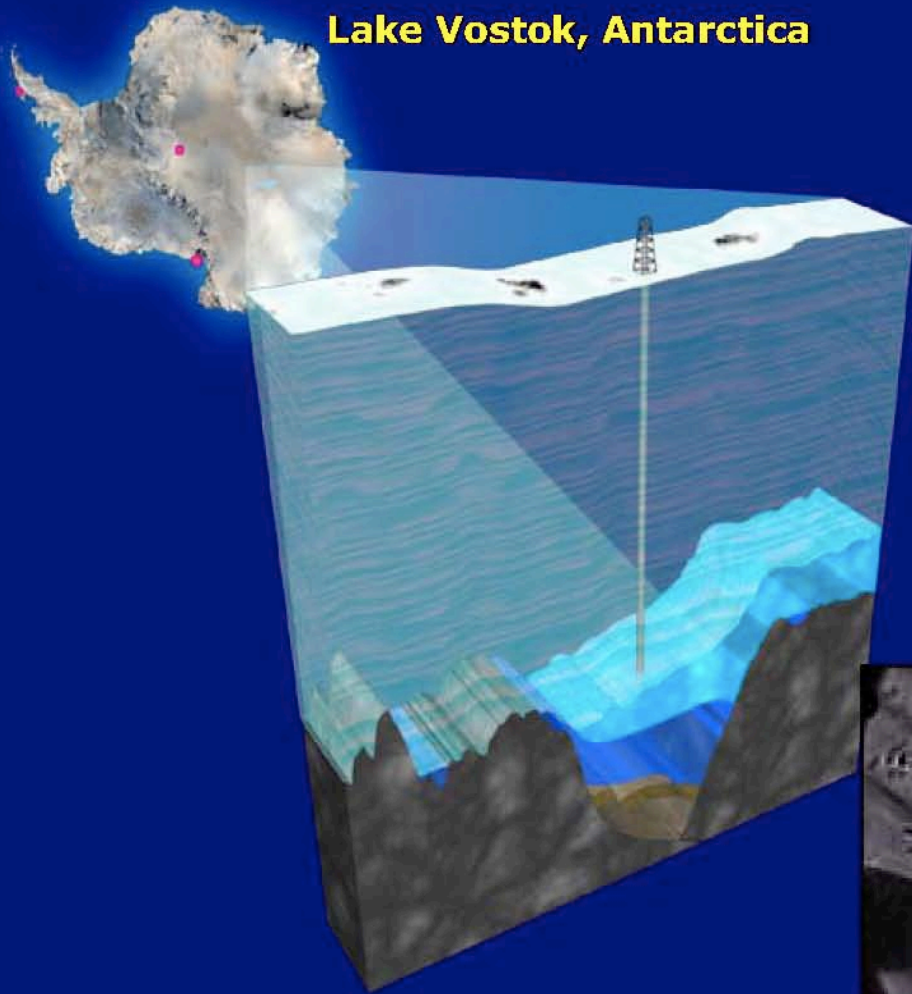




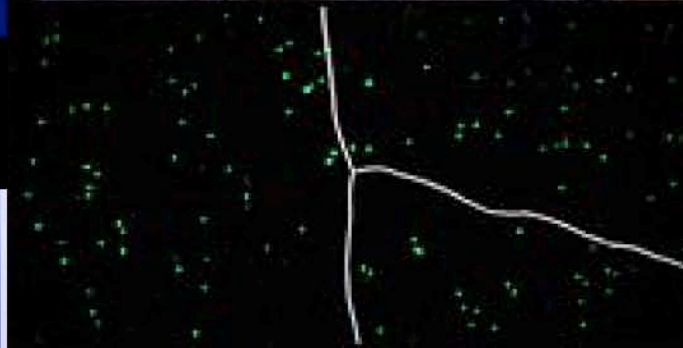
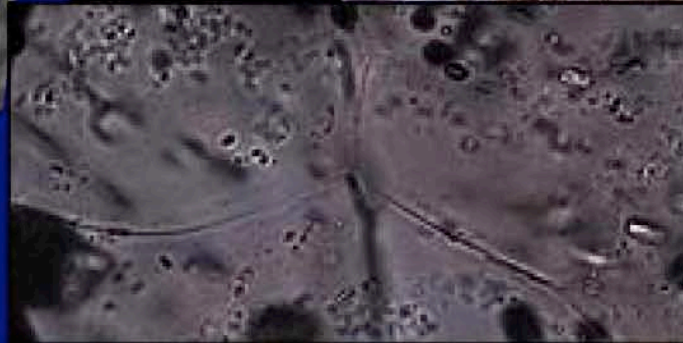
***Polar Biota live in Extreme Environments
where the physical and biological conditions
are close to the limits***




Lake Vostok, Antarctica



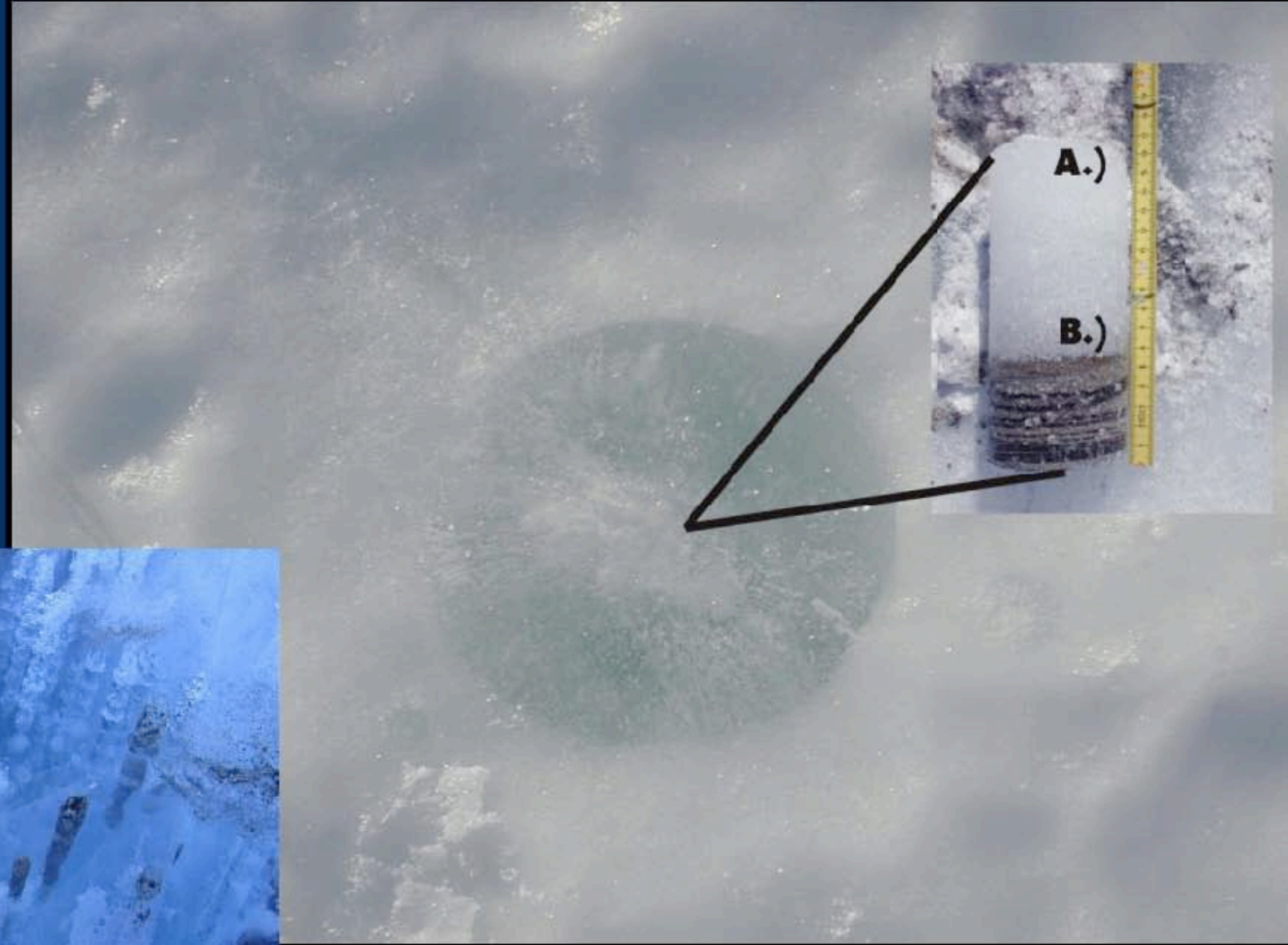
Life survives, and even thrives in ice!





Imagine sticking bacteria in the freezer and taking them out millions of years later to find that they are still alive.

Ice acts as a genetic popsicle





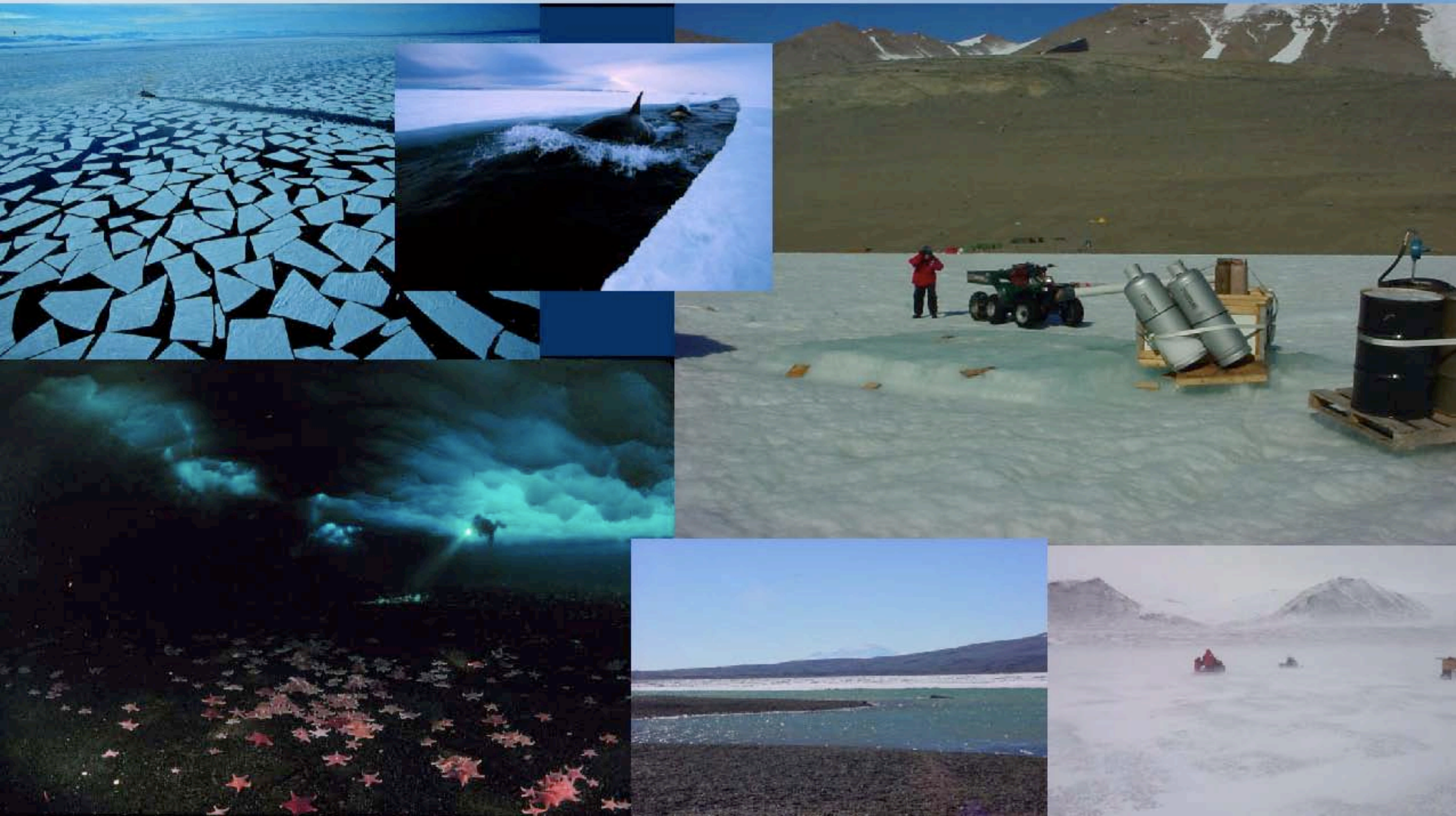
Low and high light levels.



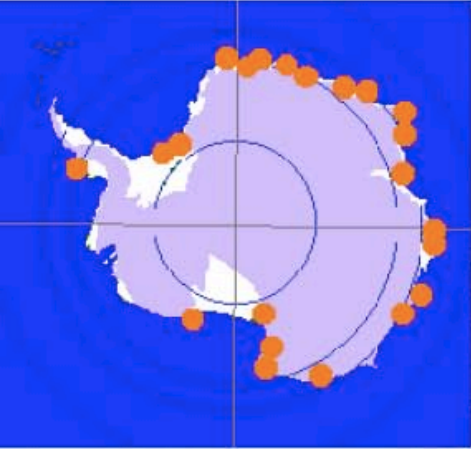
Pigmentation as a survival strategy



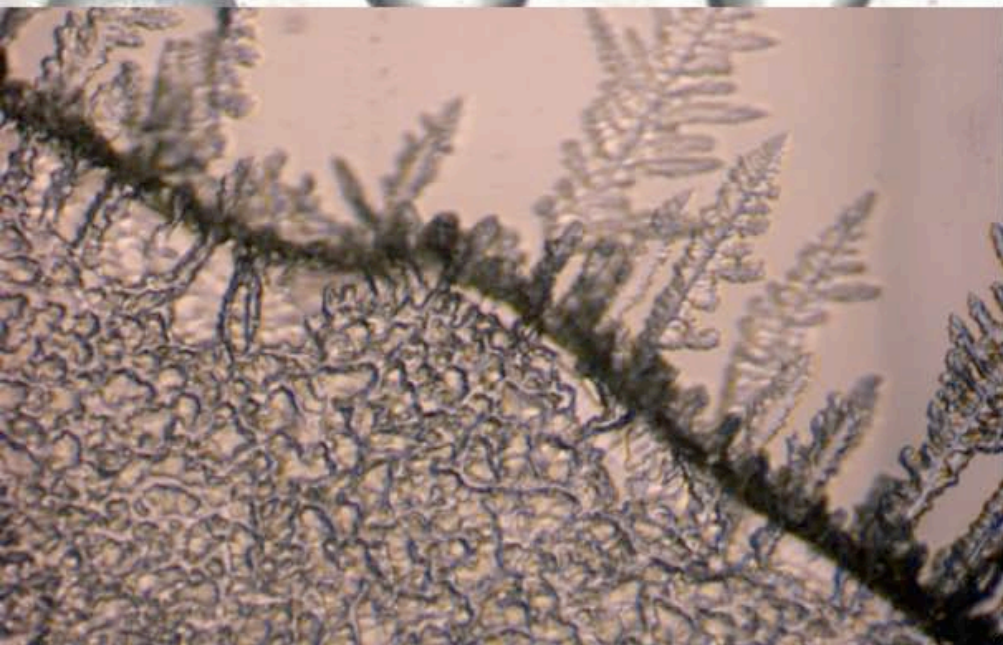
Severe physical disturbances



Polar Biota: Amazing Adaptations to these Extremes



Antifreeze proteins, INA



How do seals stay warm?





See exercise



How humans who study seals stay warm



My experience Interacting with teachers and students

- From afar....
 - Set up dialogue with classrooms where students emailed questions while I was in the field
 - On my return I visited several of these classrooms, gave a presentation and talked with the students
- In the field
 - Interacting with TEA's on other research teams
 - Hosting a teacher in the field
 - Webcasts from the field to science museums and classrooms

My experience Interacting with teachers and students

- Pros from afar
 - Allows me to reach many students at once
 - For the younger grades they can use this as an exercise in learning how to write letters
 - The students “know” me when I come to talk to them
 - Questions can be answered in my down time
- Cons from afar
 - Often challenging to find down time while in the field
 - Questions span the gamut, and are sometimes outside my area of expertise requiring me to find the answers

Pony Lake, Antarctica



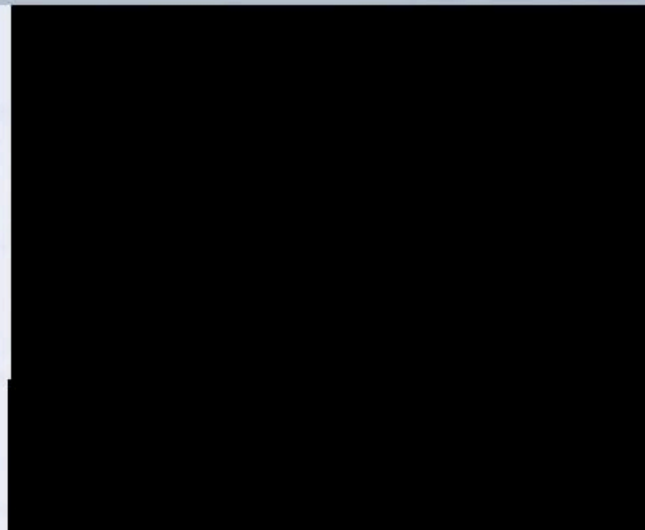
Make sure the
teacher is a
full member of
the team!



Through the
good.....



....and bad





Get to know your teacher/researchers beforehand—discuss expectations, time commitments, special needs and what is involved



Spend time getting to know each other, both sides can learn a lot and help pass this on to the students. With luck your relationship will last much longer than a field season.

Support is amazing...but not always required!



National Science Foundation

WHERE DISCOVERIES BEGIN

Good links

Polar palooza educators corner

<http://passporttoknowledge.com/polar-palooza>

Beyond Penguins and Polar Bears

<http://expectvoice.nsd1.org/polar/>

McMurdo Dry Valleys LTER

www.mcm1ter.org

THE END

