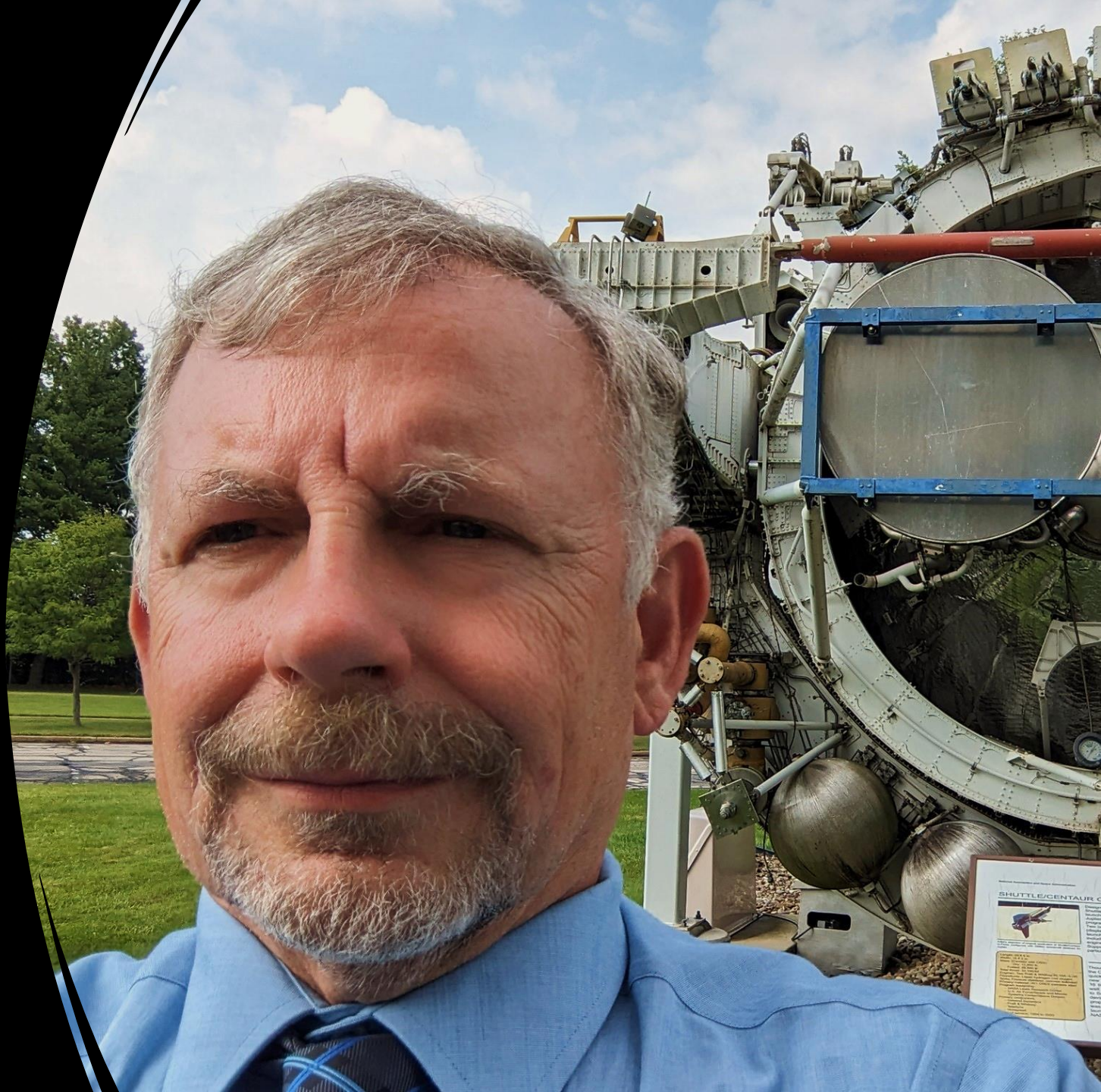
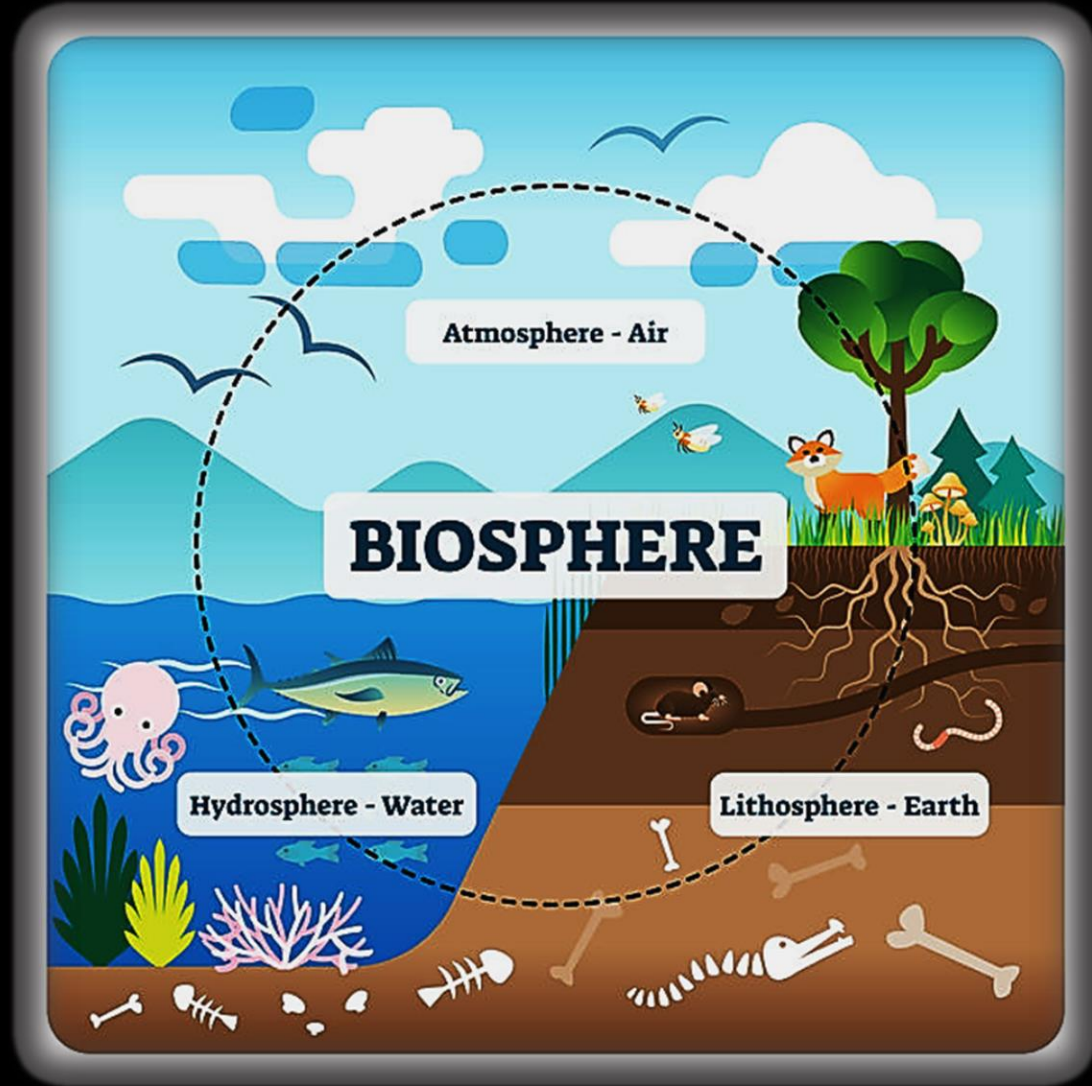


Andrew Trunek
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Melanin Overview



What is Melanin?



Melanins are biopolymers that are considered natural pigments.

What is a biopolymer?

Biopolymers are natural polymers produced by the cells of living organisms.



Alginate



Gelatin



Keratin



Cellulose



Chitin



Lignin



Collagen

Five different kinds natural melanin

Melanin is a generic term, used to reference any of the naturally produced melanin's.



Eumelanin



Pheomelanin



Allomelanin and Pyomelanin



Neuromelanin



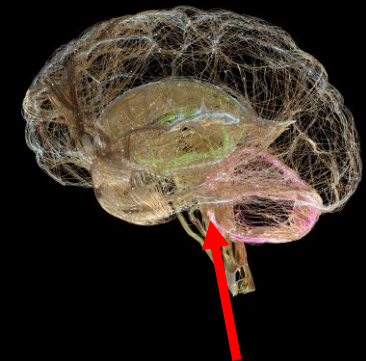
Squid Ink



Red Hair

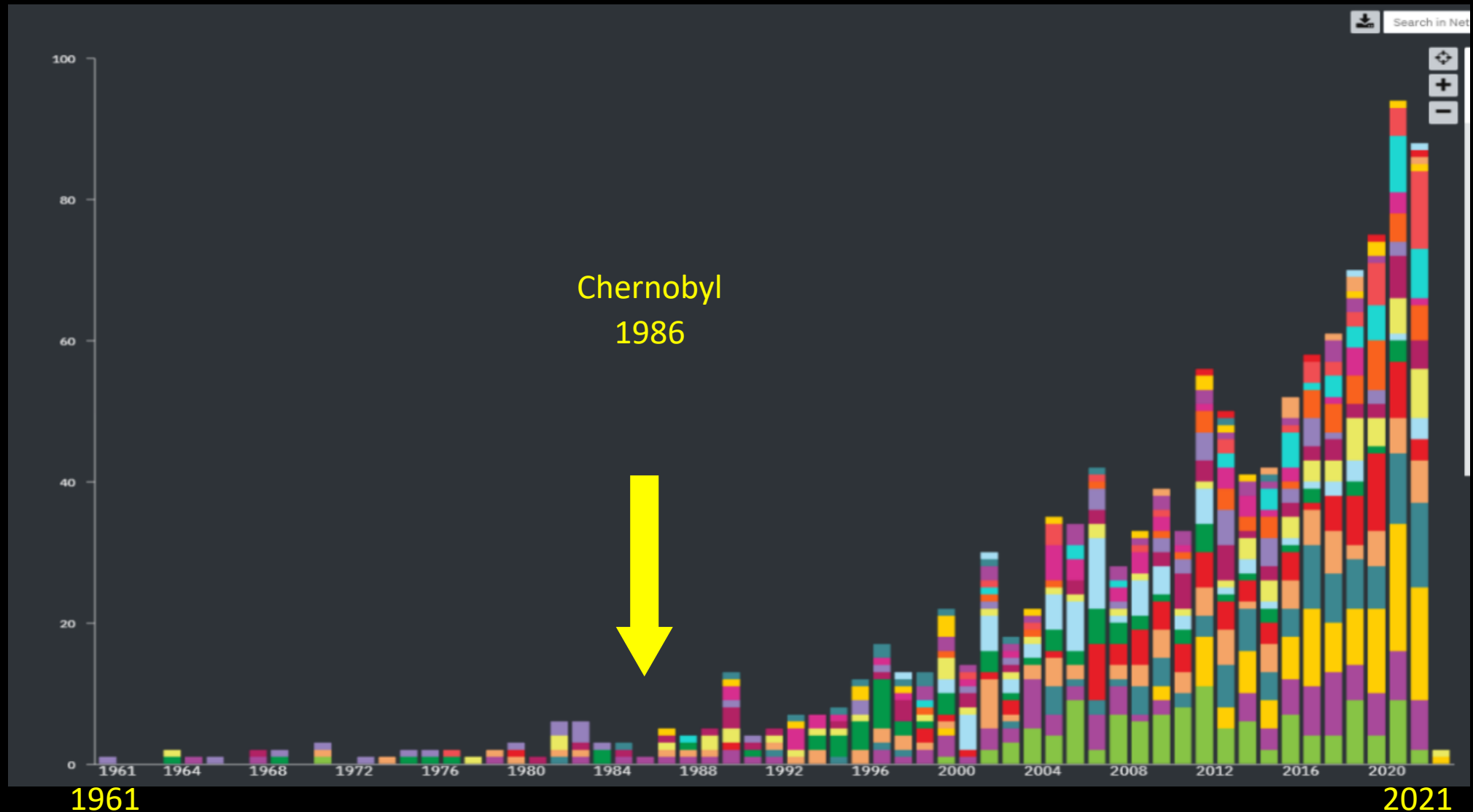


Yeast



Substantia Nigra

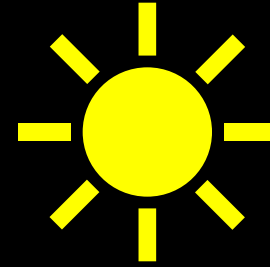
The accident that started it all



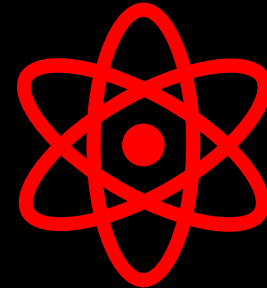
Non-medical Melanin Publication Data

Why is there interest in melanins?

Photoprotection



Radiation Tolerant

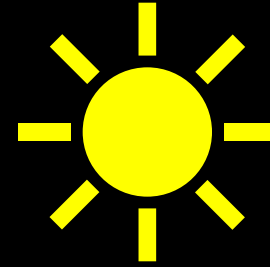


Thermal Regulation



Why is there interest in melanins?

Chemical protection



Hygroscopic



Affinity for free radicals

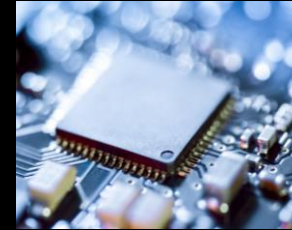
Fe^{2+} , Zn^{2+} , Mn^{2+} , Mg^{2+} , Ca^{2+} , Cd^{2+} , Cu^{2+}

Why is there interest in melanins?

Mechanical protection



Semiconductor like properties



Affinity for free radicals

Fe^{2+} , Zn^{2+} , Mn^{2+} , Mg^{2+} , Ca^{2+} , Cd^{2+} , Cu^{2+}

Non-Medical Applications?

Energy Harvesting
Conversion

Water Purification IN-SITU
Resource Utilization

Battery Anodes Cathodes

Non-Medical Applications?

Space Suits

Radiation Shielding Habitats

Sensors and Electronics for
extreme environments or
biologically compatible

Thermal Protection Heat
shields and heatsinks

Non-Medical Applications?

Anti-dessicant

Mechanical Reinforcement

Uniform Broadband Absorption from UV to IR

Battery Anodes Cathode