A painting as habitat: art as food to eat and protect, by microbes

December 11, 2018 12:02 PM Subscribe

If you could zoom in for a microscopic look at an oil painting on canvas, you would see many thin, overlapping layers of pigments—powdered bits of insects, plants, or minerals—held together with oils or glue made from animal collagens. Many of those pigments and binding materials are surprisingly edible to bacteria and fungi. Each patch of color and each layer of paint and varnish in an oil painting offers a different microbial habitat. So when you look at a painting, you're not just looking at a work of art; you're looking at a whole ecosystem. **What's eating this 400-year-old painting? A whole ecosystem of microbes** (Kiona N. Smith for Ars Technica, on **a study** of the microbes on a Renaissance painting called "**Incoronazione della Virgine**," by painter **Carlo Bononi**)

Germs of Genius—a Masterpiece's "Microbiome" Can Spell Its Demise -- *But microbes living on canvases may also help preserve irreplaceable works of art* (Richard Conniff for Scientific American)

> People have worried about the effects of fungi and other microorganisms on cultural objects

> microbial damage.

Bacteria could protect old paintings from pigment-eating microbes (Sam Wong for New Scientist)

> Pigment-eating microbes play a part in degrading priceless paintings, but other microbes may help us to save them.
>
> Just like our bodies, oil paintings are home to a community of microorganisms, but few

studies have attempted to describe them. To learn more about the microbes that live on paintings, Elisabetta Caselli of the University of Ferrara, Italy, and colleagues sampled tiny sections of *Incoronazione della Virgine*, a work completed in 1620 by the Italian painter Carlo Bononi. The canvas was hung on the ceiling of the Basilica of Santa Maria in Vado in Ferrara until an earthquake damaged the church in 2012.

The researchers isolated multiple strains of *Staphylococcus* and *Bacillus* bacteria that were living on the painting, as well as thread-like fungi from four genera, including *Aspergillus*, *Penicillium*, *Cladosporium*, and *Alternaria*. They also identified pigments such as red and yellow earths and red lac that could be nutrient sources for the microorganisms.

Characterization of biodegradation in a 17th century easel painting and potential for a biological approach (Elisabetta Caselli , Simonetta Pancaldi, Costanza Baldisserotto, Ferruccio Petrucci, Anna Impallaria, Lisa Volpe, Maria D'Accolti, Irene Soffritti, Maddalena Coccagna, Giovanni Sassu, Fabio Bevilacqua, Antonella Volta, Matteo Bisi, Luca Lanzoni, Sante Mazzacane) Published: December 5, 2018 **https://doi.org/10.1371/journal.pone.0207630**

posted by **filthy light thief** (2 comments total) 21 users marked this as a favorite

Related from a very recent New Yorker - **Do Proteins Hold the Key to the Past?**

surface of six-hundred-year-old cooking pots found at an Inuit site in northern Alaska. Three years later, chemists found a hundred and twenty-six different proteins in a mammoth femur. With new proteomic techniques emerging constantly, the field has a heady, chaotic atmosphere of possibility. At a four-day conference called Ancient Proteins, held this summer in Copenhagen, presentations had titles such as "**Biologics in Art: Whaaat???**," "Palaeoproteomic Analysis of Binding Media and Adhesives in Ancient Egypt," and "Through the Looking Glass, and What Amino Acids Found There."

Emphasis mine, because awesome. And science!

posted by **filthy light thief** at **9:06 PM** on December 11

« **Older** Subverting Number 1 with Number 2 | 20 minute video I accidentally watched all of... **Newer** »

Related Posts

I Could Not But Wonder at It February 2, 2017

What is thy name? July 27, 2015

xylem never looked so good August 27, 2014

Your funk says a lot about you December 30, 2013

The beauty of Molecular, Cell, and Microbiology September 25, 2010

RobertHooke
Hooke
habitat
LinksToTheDamnPaper
proteomic

About MetaFilter

MetaFilter is a weblog that anyone can contribute a link or a comment to. A typical weblog is one person posting their thoughts on the unique things they find on the web. This website exists to break down the barriers between people, to extend a weblog beyond just one person, and to foster discussion among its members.

Home | FAQ | About
Archives | Tags | Popular
Random | Wiki | Search
Chat | Labs

Search…

Fund MetaFilter

Join 5,915 readers in helping fund MetaFilter

Contact Us

Classic Theme.