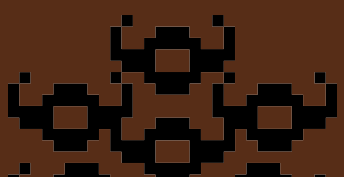
Alex Boyes

LORE CRAFT

Serpentine
Synthetic Ecologies Compendium
Season 1 Microbial Lores
Jul 07, 2022

CELLULAR TROMPE L'ŒIL
SENSORY INTIMACY
NON LINEAR TEMPORALITIES
STEWARDS OF KNOWLEDGE



Letter from the Editor

Serpentine Synthetic Ecologies Lab presents Compendium, a growing collective archive of resources, reflections, sketches, conversations, and content that support artistic and critical inquiry into ecology and life sciences. The inaugural season is Microbial Lores curated by Angela Dimayuga and a guild of extraordanry thought leaders. With focus on fermentation the archive deep dives into broad histories of knowledge and the invisible scales of life that govern not only our kitchens, but also our contemporary science, culture and technology.

Bringing artistic and scientific communities into experimental exchanges through iterative narrative building, and by contributing to the emergence of Synthetic Ecologies we are creating an intersectional field that investigates the interconnectedness of cultural inquiry and living systems in relation to adapting biological developments.

We believe that creativity is connecting the dots, sharing and building collectively paths less crossed. There is no wrong way of seeing. We invite you to walk along a path with us, and share your compendium of compendiums.

— Yasaman Sheri

The Compendium Guild who has collected and created the archive is made up of:

Yasaman Sheri	Principal Investigator
Angela Dimayuga	Chef, Cultural Producer, Transdisciplinary Artist
Nadia Berenstein	Flavour Historian
Namita Patel	Fermentation Scientist
Joshua Evans	Novel Fermentations Researcher
Lucy Chinen	Bio-based Materials Practitioner & Researcher
Seetal Solanki	Materials Translator
Claire L. Evans	Writer & Musician
Chiara Di Leone	Writer & Researcher
Alexander Boyes	Integrated Producer
Charles Broskoski	Co-founder Are.na

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BATTLES WITH BACTERIOPHAGE (PART 16): Phage therapy as a potential solution in the fight against antimicrobial resistance

Article | Open Access | Published: 19 May 2020

Phage therapy as a potential solution in the fight against AMR: obstacles and possible futures

Charlotte Brives & Jessica Pourraz

Palgrave Communications **6**, Article number: 100 (2020) | Cite this article

43k Accesses | **46** Citations | **37** Altmetric | Metrics

Abstract

Phage therapy, the use of bacteriophage viruses to treat bacterial infections, has existed for more than a hundred years. However, the practice is struggling to develop, despite growing support over the past 15 years from researchers and doctors, who see it as a promising therapy in the context of the rise of antimicrobial resistance (AMR). While the reasons for these developmental difficulties are complex, in this article we wish to address the effects of pharmaceutical regulations on phage therapy. By showing how phages are assimilated to an umpteenth antibiotic in legal texts, but also in certain medical practices, this article proposes to analyze the consequences of such regulatory categorization both for their production and the logistics of administration of proof of their efficacy in randomized controlled trials (RCTs), as well as the underlying concepts of infection and treatment. This paper follows Chandler's work on the concept of antibiotics as infrastructure and its inversion presented by antimicrobial resistance. Phages as living, dynamic, evolving, and specific entities, do not lend themselves easily to current categories, norms, and development models. In this sense, they act as disruptors, revealing the limitations imposed by the existing infrastructure. More precisely here, and to continue Chandler's initial thought process, this paper aims to show that antibiotics also form a kind of epistemological infrastructure, which acts as a powerful inhibitor to the development of phage therapy. In this sense antibiotics prevent the development of solutions to the problem they contribute to create. But the difficulties phage therapy faces, as highlighted in this article, can be interpreted as entry points for thinking of another medicine and imagining other possible futures. This analysis is based on a 3-year fieldwork study (2016–2019) in Europe (France, Belgium, and Switzerland), during which we conducted semi-directed interviews with various phage therapy stakeholders (physicians, researchers, pharmacists, regulators, patients, and patient associations), participatory observation in labs and observations during symposia and workshops on phages and phage therapy.

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Associated Content

Collection

Anti-biosis – social and cultural inquiries into human-microbe relations

Sections | Figures | References

Abstract

Introduction

A brief history of phage therapy

On phages' mode of action and potential uses

The regulatory framework: phages as industrial m...

Categorizing anti-infectives: phages as an umpte...

Conclusion/discussion

Data availability

Notes

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Author information

Ethics declarations

Additional information

Rights and permissions

About this article

Further reading

Biodegradable Plastics - Can Polyhydroxyalkanoates Be Produced Efficiently From Waste Plant and Animal Oils?

Biodegradable Plastics >"Polyhydroxyalkanoates (PHAs) are a potential replacement for some petrochemical-based plastics. PHAs are polyesters synthesized and stored by various bacteria and archaea in their cytoplasm as water-insoluble inclusions. PHAs are usually produced when the microbes are cultured with nutrient-limiting concentrations of nitrogen, phosphorus, sulfur, or oxygen and excess carbon sources. Such fermentation conditions have been optimized by industry to reduce the cost of PHAs produced commercially. Industrially, these biodegradable polyesters are derived from microbial fermentation processes utilizing various carbon sources."

Biomaterials - bacterial cellulose-footwear.jfif

Biomaterials - Bacterial cellulose as a potential bioleather substitute for the footwear industry

microbial biotechnology

Open Access

Opinion

Bacterial cellulose as a potential bioleather substitute for the footwear industry

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All consumer goods – including fashion products – use up resources; there is no exception to this rule. According to Mark Sumner of the University of Leeds (UK), *the world of fashion has some major sustainability problems. By 2030, it is predicted that the industry's water consumption will grow by 50 per cent to 118 billion cubic metres, its carbon footprint will increase to 2,791 tonnes, and the amount of waste it creates will hit 148 tonnes* (https://www.independent.co.uk/life-style/fashion/it-may-not-be-possible-to-slow-down-fast-fashion-so-can-the-industry-ever-be-sustainable-a7970031.html). These predictions appeared despite significant progress being made by brands and retailers to minimize their impact. Many are following sustainable initiatives to reduce their use of energy and chemicals throughout the supply chain. Attempts are also being made to reduce water consumption, e.g., through the use of new dyeing technologies (http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf).

As the manufacture of leather is dependent on animal skins, the global leather goods business is no stranger to the issue of sustainability. Raising and slaughtering the millions of animals whose skins feed the industry are inefficient, are cruel, and come with a huge environmental cost. A single pair of leather boots requires the use of 50.2 m^2 of land and 25,000 L of water, although if the wastewater from the leather tanning process passes through a treatment plant, and this demand can be reduced to 14,500 L (https://www.foe.co.uk/sites/default/files/downloads/mind-your-step-report-76803.pdf).

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Economic importance of the leather industry

From raw hides to finished garments, the global leather trade was worth US$77.5 billion in 2010; for 2018, its predicted worth is US$91.2 billion (the 2013–2018 annual growth rate being 3.4%). In Europe, the leather and related goods sector comprises about 36 000 enterprises, which together have a turnover of €48 billion and employ around 435 000 people. The footwear industry, which accounts for 41% of this, is the largest market segment (http://ec.europa.eu/growth/sectors/fashion/leather/eu-industry/).

The increased focus on animal rights plus the stringency of laws governing the manufacture of real leather are, however, propelling demand for synthetic substitutes. The global syntheztic leather market was worth US$22.13 billion in 2015; its predicted worth for 2021 is US$33.54 billion, and for 2025 some US$85.05 billion (2016–2021 compound annual growth rate: 7.20%) (https://www.businesswire.com/news/home/20170620005839/en/Synthetic-Leather-Market-Reach-85-Billion-2025). Growing demand from major end-use industries such as the footwear, furnishing and automotive industries is expected to drive the market. However, the harmful environmental effect of polyurethane (PU) and polyvinyl chloride (PVC) processing is a major problem (https://www.researchandmarkets.com/reports/3985073/synthetic-leather-artificial-leather-market-by#relb0). New leather substitutes are therefore needed.

One start-up, Modern Meadow, is developing a 'leather growing' technique using a strain of yeast genetically engineered to produce bovine collagen. Vegan leather enterprises, which produce artificial leather from vegetable sources such as apples (The Apple Girl), pineapples (Ananas Anam), grapes (VEGEA), mushrooms (Grado Zero Espace), soy (XXLab), paper (Paper No. 9), corn (Coronet), cork (Pelcor) and tea (Iowa University and ScobyTec), are also springing up. Cellulose of plant origin has long been used to make textiles (rayon, e.g., is made from pulp or cellulose), and scientists

source: Bacterial cellulose as a potential bioleather substitute for the footwear industry
Connected by Namita Patel

>"Single-use components for biopharmaceutical manufacturing have a lower environmental impact than reusable components, but disposal is still a consideration."

Biofuel Production

source: Shedding light on dark fermentation for biofuel production
Connected by Namita Patel

tablet

Object Type
tablet

Museum number
140855

Title
Object: Object: British Museum Society Tablet

Description
Clay tablet; record of beer; impressed with five different types of numerical symbol.

Cultures/periods
Late Uruk

tentative science around establishing 'new' tastes—what constitutes a taste conceptually? Typically I think it is often seen to require identifying a specific receptor (or receptors) in the mouth and a specific molecule (or molecules) that stimulate it/them. But there might also be controversy here.

Substances that keep coming up when learning about insect fungus farming: Penicillin - to control bacteria that would sicken the fungus, comes from body of leaf cutter ant but obviously also antibiotic. Mold kills bacteria. Ethanol - ambrosia beetles are attracted to sick trees with ethanol to start their garden. - Lucy

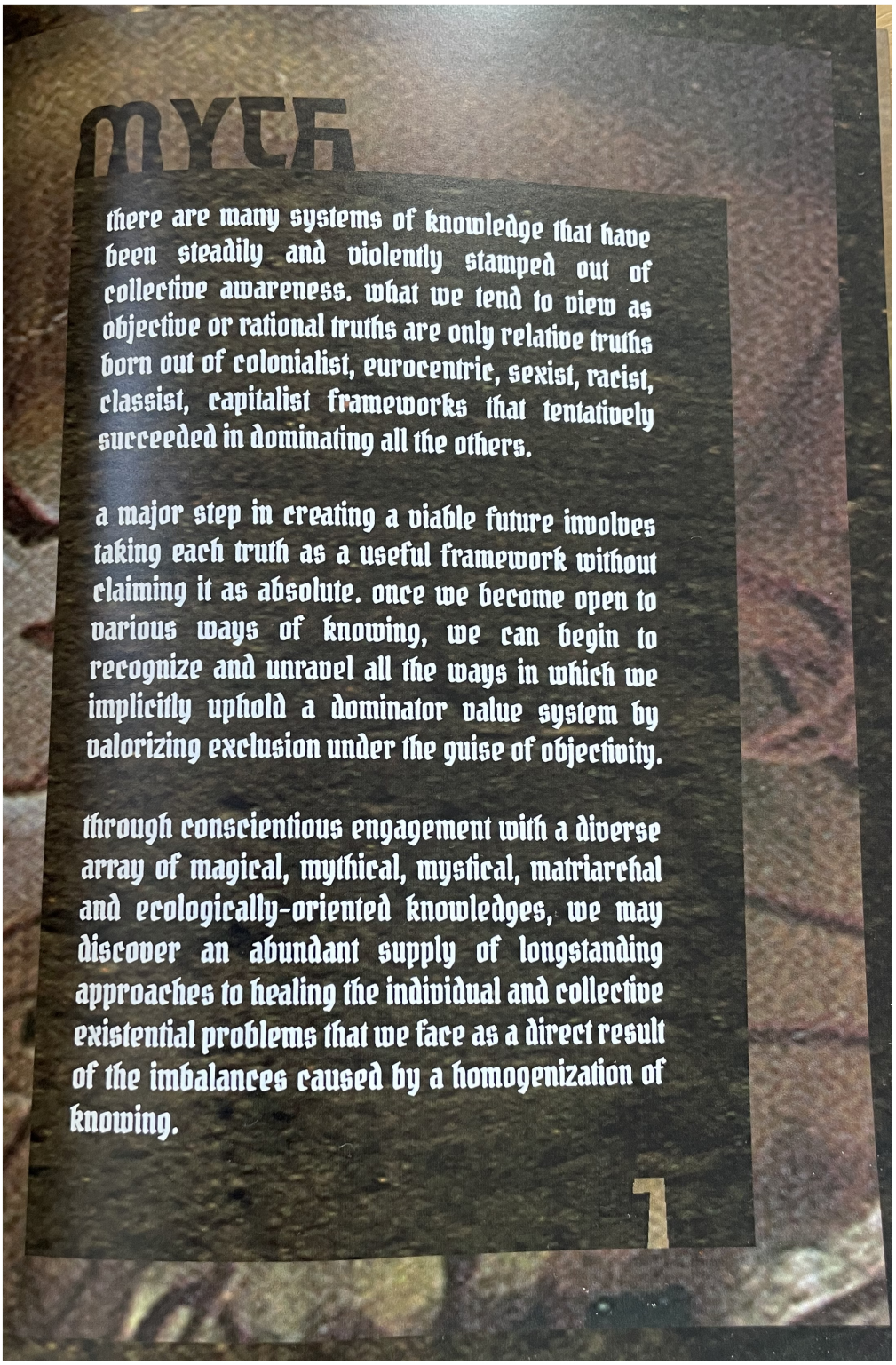
limited to human evolution, physiologies, and industry).

The "surroundings" we share with microbial life are many given their ubiquity; our bodies, our dwellings, and our ecological niches are "ours" as multiple species, shared in instances of perpetual (at times risky) cohabitation. In this sense, attunement

Mother Scobies


PARASITE
every being is continually defined and sustained by the things going in and out of it. while this complex codependency of all things is inevitable and essential for survival, individual and collective bodies can still maintain awareness of habitual absorptions and excretions, with the intention of both processes increasing one's life force rather than leaking it out.
giving too much leads to exhaustion and weakens the potency of that which a being has to give, while receiving too much can cause greed and perpetual dissatisfaction. gratitude is a restorative feeling that helps keep the two in balance, yet balance is not always an ideal, for threshold crossing is a prerequisite for transformation.
pregnant bodies give extreme amounts of life force to their fetus. lovers give extreme amounts of life force to their obsession. revolutionaries give extreme amounts of life force to their vision. self-sacrificial imbalance with intention can revitalize the whole. standing outside of yourself can involve letting an alien grow inside of you.
6

Myth: Radical Becmoing In The Ongoing Now
Alexandra Neuman




Current Biology
Volume 29, Issue 10, 20 May 2019, Pages R381-R393

Review

Domestication of Industrial Microbes

Jan Steensels [1, 2, 3, 4], Brigida Gallone [1, 2, 3, 4], Karin Voordeckers [1, 2, 3], Kevin J. Verstrepen [1, 2, 3]

https://doi.org/10.1016/j.cub.2019.04.025

Domestication refers to artificial selection and breeding of wild species to obtain cultivated variants that thrive in man-made niches and meet human or industrial requirements. Several genotypic and phenotypic signatures of domestication have been described in crops, livestock and pets. However, domestication is not unique to plants and animals. Microbial diversity has also been shaped by the emergence of novel and highly specific man-made environments, like food and beverage fermentations. This allowed rapid adaptation and diversification of various microbes, such as certain *Lactococcus*, *Lactobacillus*, *Oenococcus*, *Saccharomyces* and *Aspergillus* species. During the domestication process, microbes gained the capacity to efficiently consume particular nutrients, cope with a multitude of industry-specific stress factors and produce desirable compounds, often at the cost of a reduction in fitness in their original, natural environments. Moreover, different lineages of the same species adapted to highly diverse niches, resulting in genetically and phenotypically distinct strains. In this Review, we discuss the basic principles of microbial domestication and describe how recent research is uncovering its genetic underpinnings.

Previous article in issue Next article in issue

Main Text

Introduction

Darwin's theory of evolution describes how species change over time

Evidence for the hallmarks of human aging in replicatively aging yeast

>"Recently, efforts have been made to characterize the hallmarks that accompany and contribute to the phenomenon of aging, as most relevant for humans 1. Remarkably, studying the finite lifespan of the single cell eukaryote budding yeast (recently reviewed in 2 and 3) has been paramount for our understanding of aging."

Material Memory is what sticks out to me. A lot of what has been passed through ancient traditions and where all of this knowledge and wisdom is traversing to now. Materials have been the vessels of holding this knowledge and are containing so much memory, memories that are connected to the human and also what is being contained/fermented. This timeline that we can focus on for this would be western science meets indigenous science, so that we are including both perspectives and all of the in between. The materials are a way of passing on knowledge so to speak and now these materials are being reinterpreted for our needs today but also being rediscovered - old meets new or familiar meets unfamiliar.