Using Cover Art from *Emerging Infectious Diseases* to Inspire Microbiological Education[1]

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The *Emerging Infectious Diseases* journal covers demonstrate how art can depict, explain, and humanize science. Inspired by those works, this article shares teaching strategies to integrate art into microbiological education. With this curriculum, I encourage others to explore how art can deepen our understanding of microbiology and the world around us.

Every month the *Emerging Infectious Diseases* (EID) journal cover showcases a work of art to visually depict the relationship between science and humanity's lived experience. Incorporating visual art into each edition humanizes content for scientists while also increasing interest for those outside the field (*1*). This tradition began in December 1997 when the painting *Bloemstilleven, Floral Still Life* (2) was chosen to represent that edition's theme of foodborne illness. In October 2000 (*3*), issues started to include About the Cover essays to provide details on the artist, relevant history, and a brief interpretation that contextualizes why the artwork was chosen and how it relates to infectious disease and public health (*4*). In the years since 2000, covers have included art directly inspired by microorganisms, such as *The Pathogen Quilt* (*5*), or works created by those who have personally experienced infectious disease, such as Paulina Siniatkina's painting *Don't Speak* (*6*). Several of those covers were highlighted in the 30th anniversary edition and in the 2013 book by founding managing editor Polyxeni Potter (*7*,*8*); in addition, the online archive of EID cover art provides a complete visual record from its inaugural appearance in 1997 through now (*9*).

The collection of more than 320 EID covers provides a unique opportunity to consider the various ways infectious disease can be visually represented. For example, in reviewing the wide range of influenza-inspired artwork, John Singer Sargent's *Interior of a Hospital Tent,* featured on the October 2018 cover, shows a rare moment of calm during World War I (*10*). Inspired by Sargent's recovery from influenza alongside wounded soldiers, the painting helps us remember the war, illness, and death experienced a century before. Similarly, the cover with Egon Schiele's *Self-Portrait with Physalis* draws attention to an artist who died during the 1918 influenza pandemic, just 3 short days after his wife and unborn child succumbed to the virus (*11*). Although those 2 examples effectively communicate history and loss, others depict viral transmission, such as Ellis Wilson's *Caribbean Bird Vendor*, which not only portrays the relationship between the bird trade and avian influenza but also illustrates how socioeconomic conditions connect to disease spread (*12*). Similarly, Jenny Howard's stained-glass *The Natural History of Influenza A Virus* expands on the virus' zoonotic nature and explores the importance of antigenic shift and the threat of pandemic flu (*13*).

Instead of treating art and science as separate domains, EID adopts an interdisciplinary approach by pairing each issue's cover artwork with an accompanying essay that explores its scientific connections and relevance to public health (*4*). This defining publication feature successfully exemplifies how creative, visual perspectives can support efforts to inform and educate, providing a model for art-based teaching and learning in science education. In this article, I share curricular resources from an Art and Infectious Disease elective created at the University of Washington, Bothell (Washington, USA), including several innovative art-based assessments. My goal was to help

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instructors expand their pedagogy while also inviting scientists, public health professionals, artists, and others to consider how art can deepen understanding and engagement with the microbial world.

Course Overview

The EID covers inspired me to consider how art could be integrated into microbiological education, which resulted in developing an elective course that explores connections between art and infectious disease. The course introduces core concepts of medical microbiology such as cause, transmission, treatment and prevention, while fulfilling a humanities requirement because students will consider how they can artistically represent what they have learned; although the course is designed for nonmajors, most students are nursing or health studies. This class has primarily been offered 100% online over a 9- or 10-week quarter that is divided into weekly asynchronous modules. A sample syllabus is provided for those interested in learning objectives, course schedule, assignment descriptions, and grading rubrics (Appendix 1, https://wwwnc.cdc.gov/EID/article/32/12/26-0532-App1.pdf).

The course begins with a review of several resources that explore the relationship between art, science, and medicine, after which students reflect on how they identify as either analytic or artistic (Appendix 2, https://wwwnc.cdc.gov/EID/article/32/12/26-0532-App2.pdf). That reflection leads into a discussion around the false dichotomy of art versus science, with many students commenting on how past academic experiences and the pressure to always be correct has left them feeling insecure and vulnerable when exploring artistic expression. Such pressure and insecurity are especially true for nursing and premedical students, who find it challenging to be creative because of the high demands of clinical training and professional performance.

Recognizing the insecurity in exploring artistic expression is a common theme, I find it helpful to include Mingqian (Shelly) Xie's work as a biology student at Stanford University. Although she was often conflicted about her love of science and art, she combined her talent and knowledge to develop the work *Neglected* (*14*,*15*). In that performance, Xie uses sand on a light box to create, manipulate, and shift images depicting schistosomiasis' life cycle and the effect the social dimensions of health have on this neglected disease. This visual narrative gives a compelling example of interdisciplinary thinking that provides a foundation that fosters an appreciation for art's role in medicine, science, and public health. As an introductory resource, *Neglected* illustrates how art will serve as a tool for learning and reflection during the course.

After those introductions, the class explores Hansen's disease, plague, cholera, influenza, tuberculosis, HIV, and Ebola virus. Each weekly infectious disease module follows the same general format; students start with science-based materials that are assessed by using a mini-lecture quiz strategy (*16*). After learning about the pathogen, epidemiology, transmission, treatment, prevention, and major historic or current events, students reflect on a collection of artwork.

Art Reflections

Each weekly infectious disease module introduces students to a microorganism, after which they are asked to explore, interpret, and reflect on a collection of related artwork. They are assessed by their ability to articulate how art captures the pathogen's history, science, medicine, and epidemiology. This exercise challenges students to develop observational skills as they analyze their surroundings by using a microbiological lens, thereby enhancing understanding, deepening critical thinking, and fostering resiliency and empathy. I have chosen the course's artwork to emphasize art's role in recording history, raising awareness, advocating for change, and recovering from illness. More than 80 teaching resources are available for pathogens covered in the class (Appendix 2). This supplemental resource is particularly intended for educators but might be of interest to those seeking more extensive examples of art related to infectious disease.

Each art reflection includes a collection of historic and contemporary works that often feature EID covers (Appendix 2). For Ebola, for example, the course examines a microscopic image predating the formal adoption of cover art (*17*) and Edward Epp's watercolor on the February 2016 issue (*18*). After reading Byron Breedlove's accompanying essay that describes how Epp's use of color, light, and movement reflects the relationship between urbanization and disease spread (*18*), I encourage students to critically interpret the work, drawing on their understanding of Ebola and the epidemiology of past outbreaks. For example, the focal palm tree might prompt students to consider the role of fruit bats as a reservoir in this zoonosis; alternatively, some might note the red tones and make connections to the bleeding associated with this hemorrhagic disease; others might see the structure of the thread-like virus in the gray horizontal lines.

Of note, the EID covers I highlight do not always explicitly depict a disease, which is the case with van

Gogh's *The Starry Night* (*19*) from May 2025. That painting illustrates the importance of patterns in data visualization, reinforcing how art can support science communication and health education. Other art-based resources are provided for students to evaluate the importance and effectiveness of art in data visualization, including infographics generated for past and current Ebola outbreaks (*20*–*22*). As students review materials, they are asked to consider the intended audience and how a person's background, knowledge, and experience influence understanding. Whereas visual analytic dashboards might successfully disseminate information to some audiences, I share Leslie Lumeh's work on posters for the 2014–2015 Kick Back Ebola campaign in West Africa as an example of how art can be used as a more effective public health intervention for priority populations (*23*–*25*). Students evaluate those posters for their accuracy and effectiveness in communicating risk, promoting early recognition of illness, and encouraging timely medical care. In addition, we discuss the importance of visual messaging in regions with multiple languages or limited literacy.

Another theme in this class is to emphasize the importance of art in documenting, processing, and recovering from illness and epidemics. Building off Lumeh's role in the Ebola public health campaign, we look at his wider body of work, including *Playing is Here Again* and *Keeping the Message Alive* (*26*). Using those 2014–2015 paintings, as well as David Odusote's *Yellow Suites* and Kofi Allen's *Ebola Butterfly Defect* (*27*,*28*), students reflect on the different ways each artist chose to capture the realities of the Ebola epidemic. In their analysis, students are asked to consider art's role in documenting a public health crisis and how the work supports healing for persons and communities.

Lumeh, Odusote, and Allen's paintings not only exemplify how art enriches the historic record but also its role in raising awareness and fostering empathy among those not directly affected. In our Ebola unit, this theme is further explored by considering how biologically accurate artwork humanizes science. That discussion includes David Goodsell's intricate watercolors and Luke Jerram's delicate glass microbiological sculptures (*29*–*32*). Those pieces are supplemented with the illustration from the *Art Against Ebola* campaign (*33*); students return to what they learned about the biology of this virus because they justify which of the individual snake heads best represent Ebola and why. In a final prompt, students are asked to reflect on how such initiatives can mobilize support, resources, and public engagement.

Mystery Picture Discussions

After the art reflection, students finish each infectious disease module with a mystery picture discussion. Much as editors must carefully select artwork for each EID cover, in this assignment, students are tasked with finding an image that captures what they have learned about the pathogen. This assignment is based on the idiom "a picture is worth a thousand words" and was modeled after a visual art activity implemented in an upper-division microbiological course (*34*). This assessment has been designed to round out each unit by evaluating not only students' understanding of microbiology but also their skill in translating that knowledge into visual form. Following the Save the Last Word for Me discussion strategy, students present their image in small groups without comment or explanation (*35*). Members take turns commenting on what they notice and how they see the image connected to the history, etiology, transmission, treatment, and prevention of that week's microorganism. The discussion ends when the original presenter explains where the picture came from, what inspired their choice, and how their interpretation has shifted on the basis of peer feedback. This activity has previously been accomplished by using online discussion boards but could easily be adapted for in-person learning. Additional details, including a grading rubric, can be found in the sample syllabus (Appendix 1).

The mystery picture discussions successfully encourage students to pause and reflect on how they see science, microbiology, and public health reflected in their surroundings. For their submissions, students are encouraged to engage with different forms of artistic observation. That engagement can include finding professional art in museums and public spaces (Figure 1), creating original pieces (Figure 2), identifying art in nature (Figure 3), and capturing photographs of their everyday environments (Figure 4). Exploring those varied forms of artistic expression helps students broaden how they engage with scientific content across professional, personal, natural, and everyday contexts. Considering that the goal of this assignment is to think creatively about how microbiology is reflected in art, everyday life, and the spaces we inhabit, online images (such as those retrieved through an internet search) are not accepted.

Art Gallery Research Project

In addition to the weekly assignments, I have created a visual arts–based, quarter-long research activity. In this project, students gather information on the



Figure 1. The sculpture *Counterpoint*, by Louise McDowell (*36*), submitted by Gabe Andres, represents how professional art in museums and public spaces can connect to what students have learned about disease progression and is used in a course on using cover art from *Emerging Infectious Diseases* to inspire microbiological education. The texture of the sculpture, which was shared during our unit on Hansen's disease, stimulated a rich discussion about symptoms, especially those common in the lepromatous form. In addition, some commented that the spatial tension between the 2 figures reminded them of the stigma, shame, and isolation long associated with this diagnosis. Photograph of the sculpture shared with permission of the artist.

incidence, prevalence, microbiology, transmission, symptomology, treatment, and prevention of a medically relevant pathogen. However, instead of producing a formal paper, this work culminates in a curated gallery including artistic pieces that communicate what students have learned. In the online version of the class, galleries are created by using platforms such as Google Sites, Adobe Express, or Canva. Specific instructions, requirements, and a rubric are included in the sample syllabus (Appendix 1).

For the galleries, I encourage everyone to find local examples of art from museums, galleries, and public spaces, but unlike the mystery picture activity, students may use online resources such as the archive of EID cover art (*9*) or Google Arts & Culture. That use of online resources enables students to expand their search to find pieces that best represent their project. For example, a student working on a rabies gallery might draw on the February 2025 EID cover featuring *Un Cas Grave ou La Leçon de Médecine* and accompanying essay A Pictorial Human Case of "Furious Rabies" (*37*) or choose Inés Cámara Leret's *Spit Crystal* to represent the importance of saliva in transmission (*38*). In addition, the mosaic adorning Louis Pasteur's crypt could be included to represent the history and importance of vaccination as well as disease transmission by narrowing in on the growling dog (*39*). A fourth option could be Federico Uribe's sculpture *Zorro Plateado* that not only depicts a primary vector but also emphasizes the virus' shape because the fox is made entirely of bullets (*40*).

Although most students choose to showcase work by other artists, some use that assignment as an opportunity to create pieces of their own, such as a Marburg-inspired needle felting (Figure 5). Whereas original artwork is optional for the online class, it is a required element of the ultra-hybrid course that includes an art show during an in-person meeting. Regardless of artistic skill or confidence, everyone is encouraged to find a way they can uniquely and creatively showcase their research. The art show has produced incredible artwork by using a wide range of media including photography, painting, textile work, baked goods, and Lego sculptures.



Figure 2. Watercolor painting created by Isabelle Nguyen for a cholera mystery picture discussion illustrates how students can create their own original artwork on the basis of how they interpret microbiological concepts, used in a course on using cover art from *Emerging Infectious Diseases* to inspire microbiological education. Nguyen's peers commented on how her choice of medium was appropriate given this is a waterborne disease. Nguyen went on to describe the wet-on-wet technique she used to help the colors diffuse together, which was done to represent the mixture of human waste and water; in addition, she specifically added the dot of red to highlight this is a phage-infected, toxigenic strain. When questioned about the painting's texture, Nguyen explained she sprinkled salt on the paint before it dried to depict *Vibrio cholerae*'s high salinity tolerance.



Figure 3. Photograph of a moldy peach submitted by Kat Wright for a tuberculosis module demonstrates how students see microbiology and human health represented in nature for a course on using cover art from *Emerging Infectious Diseases* to inspire microbiological education. Following the assignment's instructions, Wright first shared the image without any description or context, so students spent considerable time guessing what the picture was before speculating on the rationale behind Wright's image choice. In the discussion that followed, many were reminded of what they learned about granulomas. Some commented on how the different colors and textures could represent the soft and crumbly caseous necrosis that occasionally forms in pulmonary tuberculosis.

Discussion

Paralleling EID's use of cover art to advertise, explain, and humanize the research within, integrating art into microbiological education has proven to be a powerful teaching tool, offering an interdisciplinary approach that supports the conceptional understanding of infectious disease while building critical thinking skills and empathy. That interdisciplinary approach is evident in how students analyze and interpret the art examples I provide, as well as the images, songs, poems, and other works of art they have shared in their discussions and final galleries. As Dr. McNealy noted in her experience using a similar visual art assignment, the "connections between art and science are only limited by the student's imagination"



Figure 4. Photograph taken in downtown Seattle by Matt Keenan for a discussion of plague submitted in a course on using cover art from *Emerging Infectious Diseases* to inspire microbiological education. This example represents how students can use photography to document and interpret familiar settings through a microbiological lens as a form of artistic and visual observation. This discussion took place after COVID-19, so many comments focused on the mask the man was wearing and how our experiences during 2020–2021 compared with plague epidemics of the past. Students also considered the importance of the white vapor and how it reminded them of miasma theory. In his final comment, Keenan drew attention to the trash cans in the alley that he purposefully included in frame to represent rats and their role in transmission.

(*34*). My students' submissions are educational and compelling and stimulate a wealth of discussion. In reflecting on the work they have produced over the years, I am struck by the diversity of perspectives in how students see what they have learned. Similar to the different EID covers highlighting the many ways influenza can be depicted, the mystery pictures



Figure 5. Audrey Rippey used needle felting to create this original work for her Marburg research project in a course on using cover art from *Emerging Infectious Diseases* journal to inspire microbiological education. That depiction of the causative agent served as the opening piece of Rippey gallery, which was followed by several other works of art including Glen Ligon's *A Stranger in the Village (Excerpt) #7* on display at the Seattle Art Museum (*41*) that she interpreted as not only representing the filamentous appearance of the virus, but spillover events that affect human health. Rippey concluded her gallery by using a musical piece from the group Makuma Mambo from Quimbele, Uige Province, Angola, to signify the location of the largest recorded Marburg outbreak in 2004–2005 (*42*).



Figure 6. Dan Corson's sculpture *Sonic Bloom* (*43*), submitted by Hana Shiferaw, represents how professional art can illustrate the structure of influenza, specifically the hemagglutinin and neuraminidase receptors, submitted in a course on using cover art from Emerging Infectious Diseases journal to inspire microbiological education. Image of sculpture shared with artist's permission.

shared by students similarly demonstrate the diversity in how they see, understand, and interpret this virus (Figures 6–9).

In addition to my own observations, course evaluations indicate that the combination of science quizzes, art reflections, mystery picture discussions, and gallery projects enable student success, including a more thoughtful analysis that moves beyond simple recall because students are asked to consider the broader cultural and societal context of infectious disease. Students report they leave the class viewing not just art but everyday objects in a way that helps them recognize connections not previously considered. In addition, course reflections indicate the assignments prompt deeper engagement with how illness shapes cultural and visual representation and how creative expression can help process and communicate complex public health topics.

My success in using art as an instrument for students to deeply engage with microbiology is not unique because of the experiences of other science instructors who similarly incorporate art in their teaching. In an animal physiology class, for example, students demonstrated improved engagement, curiosity, and critical thinking through the analysis of museum pieces in the context of biological pathways associated with love (*44*). Similarly, assignments involving music and visual art implemented in an upper-division microbiological course increased participation, fostered higher order thinking, and improved knowledge retention (*34*). Within medical and nursing education, art can make complex topics more accessible and strengthen key professional skills. Those programs have found that integrating art into coursework builds observational skills and evidentiary reasoning while fostering teamwork and empathy (*44*–*48*).

Embedding art into preclinical education has been shown to help students develop emotional intelligence, which will help them navigate the psychological challenges they might encounter as healthcare professionals (*45*). The mental health benefits of this curriculum were most evident during the height of the COVID-19 pandemic; most of my students were working as frontline responders. Reflections during that time suggest that integrating art into microbiological education, particularly through the mystery picture discussions, provided critical opportunities for observation, reflection, and meaning making during a highly stressful time. Independent of the pandemic, many students have remarked this class enhanced their sense of wellbeing. For some students, the class gave them permission to dedicate time and energy to artistic expression, something they rarely experience because of their responsibilities as



Figure 7. Kat Wright's photograph exhibits how influenza viral shape, including spike proteins, are reflected in nature and was submitted in a course on using cover art from Emerging Infectious Diseases journal to inspire microbiological education.

full-time working or parenting students. In addition, the gallery project provides a structured opportunity for students to engage with artistic expression alongside their academic coursework.

In addition to building resiliency that can counter burnout in future clinicians, integrating art into science education has implications for clinical practice and patient care. Nursing students have reported that the art reflections help them connect scientific content to lived experiences and professional identity. Like EID's use of cover art to link disease knowledge with human experiences (*4*), art-based assignments help bridge the scientific and human dimensions of microbiology. This approach encourages students to think more empathetically about the societal effect of infectious diseases.

For example, Breedlove's essay Living People Who Breathe and Feel and Suffer and Love explained how Edvard Munch's *Inheritance* recognizes the lived, emotional, and human reality of congenital syphilis and its intergenerational consequences (*49*). Nursing students have noted the practical relevance of similar EID covers such as *Don't speak!* (*6*) (Appendix 2). Paulina Siniatkina's artwork is shared in our tuberculosis unit to complement the scientific content that explains what happens biologically; her painting, along with other artistic components, enables students understanding of the emotional and psychological consequences of infection. Similarly, in the HIV unit, supplementing scientific explanations of transmission with visual narratives on HIV-related stigma in women of color (*50*) increases awareness and reflection on how assumptions and biases influence patient interactions.



Figure 8. Photograph of a bird that accidentally made its way into a fireplace was captured by Clair Budge to illustrate how the concepts of infectious disease can be reflected in everyday life and was submitted in a course on using cover art from Emerging Infectious Diseases journal to inspire microbiological education. In our discussion of influenza, many students are drawn to images and artwork inspired by birds because of our focus on zoonotic transmission and avian influenza.



Figure 9. Photograph of a neon sign at a local restaurant, submitted by Denver Do Le, is an example of how students reinterpret familiar surroundings on the basis of what they have learned and was submitted in a course on using cover art from Emerging Infectious Diseases journal to inspire microbiological education. In Do Le's interpretation, he focused on viral tropism and influenza's wide host range, explaining that the flying pig represented how avian and swine flu come together through the process of antigenic shift. Do Le also pointed out the pink and blue colors were also critical because they made him think of the hemorrhaging and cyanosis elicited by the 1918 strain.

In conclusion, implementing the described curriculum enhances student learning and retention while simultaneously providing students with permission to be creative in meaningful and enriching ways. Integrating art into microbiological education has affected how my students interpret and approach the content but has also personally shifted how I see my background and expertise reflected in art, nature, and my surroundings. I encourage educators to consider how they can weave such approaches into their teaching practice and challenge scientists, public health professionals, artists, and others to reflect on how art can deepen understanding, engagement, and connection across disciplines.

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Additional examples can be found on the course Instagram page at https://www.instagram.com/art_of_infectious_disease.

ChatGPT (https://chatgpt.com) was used as an editorial tool to improve clarity and conciseness; however, all ideas and original writing are the author's own.

About the Author

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References

1. Kassel M. The art of Emerging Infectious Diseases and other medical journals, 2018 Nov 28 [cited 2026 Jan 13]. https://www.cjr.org/analysis/emerging-infectious-diseases.php
2. Emerging Infectious Diseases. Bloemstilleven, floral still life. 1997 Dec [cited 2026 Jun 11]. https://wwwnc.cdc.gov/eid/article/3/4/ac-0304_article
3. Potter P. The hallucinogenic toreador by Salvador Dalí. Emerg Infect Dis. 2000;6:563. https://doi.org/10.3201/eid0605.ac0605
4. Centers for Disease Control and Prevention. Emerging infectious diseases: about the cover art, 2025 [cited 2026 Jan 13]. https://wwwnc.cdc.gov/eid/page/about-cover-art
5. Mitchell L. A personal journey through the microbial world in quilting. Emerg Infect Dis. 2025;31:2068–9. https://doi.org/10.3201/eid3110.AC3110
6. Fukunaga R, Moonan PK. Mental health and tuberculosis: holding our breath in isolation. Emerg Infect Dis. 2024;30:627–8. https://doi.org/10.3201/eid3003.AC3003
7. Drotman D. Terrifying and boring: reflecting on 30 years of Emerging Infectious Diseases. Emerg Infect Dis. 2025;31:2347–8. https://doi.org/10.3201/eid3112.AC3112
8. Potter P. Art in science: selections from Emerging Infectious Diseases. Oxford: Oxford University Press; 2013.
9. Centers for Disease Control and Prevention. Emerging Infectious Diseases: past covers, volume 32, [cited 2026 Jun 11]. https://wwwnc.cdc.gov/eid/past-covers/volume-32
10. Chorba T, Breedlove B. Concurrent conflicts: the Great War and the 1918 influenza pandemic. Emerg Infect Dis. 2018;24:1968–9. https://doi.org/10.3201/eid2410.AC2410
11. Potter P. Pale horse, pale rider done taken my lover away. Emerg Infect Dis. 2013;19:694–5. https://doi.org/10.3201/eid1904.AC1904
12. Potter P. Bird's eye view of emerging zoonoses. Emerg Infect Dis. 2010;16:369–70. https://doi.org/10.3201/eid1602.AC1602
13. Webster RG. Illustrating the natural history of influenza A viruses through art. Emerg Infect Dis. 2016;22:2231–2. https://doi.org/10.3201/eid2212.AC2212
14. Xie S. The senior reflection [cited 2026 Mar 10]. https://web.stanford.edu/~suemcc/TSR/styled-16/index.html
15. TEDx Talks. Schistosomiasis—impacting medicine through art, 2013 Aug 22 [cited 2026 Mar 10]. https://www.youtube.com/watch?v=RI5i5Mhj_do
16. Iverson-Cabral SL. Isn't it ironic? Adapting an elective on quarantine and isolation for online delivery due to a pandemic. J Microbiol Biol Educ. 2021;22:2491. https://doi.org/10.1128/jmbe.v22i1.2491
17. Emerging Infectious Diseases. Immunostaining of Ebola virus antigens. 1997 Jan [cited 2026 Jun 11]. https://wwwnc.cdc.gov/eid/article/3/1/ac-0301_article
18. Breedlove B. Not everything is as it first appears. Emerg Infect Dis. 2024;30:2454–5. https://doi.org/10.3201/eid3011.AC3011
19. MacCannell D, MacInnis B, Santibanez S. Beyond the brushstrokes: illuminating patterns and interactions to find order in complex systems. Emerg Infect Dis. 2025;31:137–8. https://doi.org/10.3201/eid3113.AC3113
20. Crisan A. The importance of data visualization in combating a pandemic. Am J Public Health. 2022;112:893–5. https://doi.org/10.2105/AJPH.2022.306857
21. CNN Health. Visualizing the Ebola outbreak in maps and charts, 2026 May 22 [cited 2026 Jun 11]. https://www.cnn.com/health/maps-ebola-charts-vis
22. Purdue Intelligent Visualization and Interaction Laboratory. EbolaVis: interactive visualization of Ebola outbreaks, [cited 2026 Mar 11]. https://va.tech.purdue.edu/EbolaVis
23. CNN. African artist who helped in fight against Ebola, 2016 Sep 20 [cited 2026 Mar 11]. https://www.cnn.com/2016/09/20/africa/african-artist-who-helped-in-fight-against-ebola
24. Post K. Sending the right message: wild game and the West Africa Ebola outbreak. Health Secur. 2018;16:48–57. https://doi.org/10.1089/hs.2017.0086
25. Sonke J, Pesata V, Nakazibwe V, Ssenyonjo J, Lloyd R, Espino D, et al. The arts and health communication in Uganda: a light under the table. Health Commun. 2018;33:401–8. https://doi.org/10.1080/10410236.2016.1266743
26. Lumeh L. Saving lives through art, 2015 [cited 2026 Mar 11]. https://www.cnn.com/2016/09/20/africa/gallery/saving-lives-through-art
27. Odusote D. Yellow suits, 2015 [cited 2026 Mar 11]. https://fadmagazine.com/2015/07/06/united-nations-to-host-ebola-art-exhibition
28. Allen K. Ebola butterfly defect, 2015 [cited 2026 Mar 11]. https://fadmagazine.com/2015/07/06/united-nations-to-host-ebola-art-exhibition
29. Wellcome Collection. How virus art reveals science. 2016 Mar 15 [cited 2026 Mar 11]. https://www.youtube.com/watch?v=f0rPXTJzpLE
30. Cohen J. Meet the scientist painter who turns deadly viruses into beautiful works of art. 2019 Apr 11 [cited 2026 Mar 11]. https://www.science.org/content/article/meet-scientist-painter-who-turns-deadly-viruses-beautiful-works-art
31. Jerram L. Ebola [cited 2026 Mar 11]. https://www.lukejerram.com/glass/gallery/ebola
32. Jerram L. Glass microbiology. 2010 Mar 5 [cited 2026 Mar 11]. https://www.youtube.com/watch?v=-RTgJnyXbpI
33. Guild GA. Art against Ebola: illustrator Otto Steininger and friends respond to the crisis, 2012 Oct 21 [cited 2026 Mar 11]. https://graphicartistsguild.org/884-2
34. McNealy TL. Connecting music, art, and science for increased creativity and topic engagement. J Microbiol Biol Educ. 2013;14:267–8. https://doi.org/10.1128/jmbe.v14i2.611
35. Facing History and Ourselves. Save the last word for me teaching strategy, 2017 Jun 17 [cited 2026 Jan 27]. https://www.facinghistory.org/resource-library/save-last-word-me

36. My Mercer Island. Guide to outdoor art on Mercer Island. 2022 Aug 9 [cited 2026 Mar 20]. https://mymercerisland.com/guide-to-outdoor-art-on-mercer-island
37. Rupprecht CE, Jackson AC, Déchelette C, Sébille N, Charlier P. A pictorial human case of "furious rabies". Emerg Infect Dis. 2025;31:1270. https://doi.org/10.3201/eid3106.250167
38. Cámara Leret I. Spit crystal. 2020 Sep 29 [cited 2026 Feb 5]. https://london.sciencegallery.com/mouthy-exhibits/spit-crystal
39. Girault CL, Guilbert Martin A, Merson LO. Crypt, rabid dogs alluding to Louis Pasteur's development of the rabies vaccine [cited 2026 Feb 5]. https://artsandculture.google.com/asset/fAG0iAS2GctvYw
40. Uribe F. Zorro plateado [cited 2026 Feb 5]. https://artistreplete.com/products/zorro-plateado
41. Ligon G. Stranger in the village (excerpt), #7, 1997 [cited 2026 Mar 6]. https://art.seattleartmuseum.org/objects/1981/stranger-in-the-village-excerpt-7
42. tinorasta. Makuma mambo 2. 2018 Apr 17 [cited 2026 Mar 6]. https://www.youtube.com/watch?v=FHK4F5u2V1g
43. Corson D. Sonic bloom [cited 2026 Mar 20]. http://dancorson.com/sonic-bloom
44. Milkova L, Crossman C, Wiles S, Allen T. Engagement and skill development in biology students through analysis of art. CBE Life Sci Educ. 2013;12:687–700. https://doi.org/10.1187/cbe.12-08-0114
45. Perry M, Maffulli N, Willson S, Morrissey D. The effectiveness of arts-based interventions in medical education: a literature review. Med Educ. 2011;45:141–8. https://doi.org/10.1111/j.1365-2923.2010.03848.x
46. Sandberg B. Effects of arts-based pedagogy on competence development in nursing: a critical systematic review. Nurs Rep. 2024;14:1089–118. https://doi.org/10.3390/nursrep14020083
47. Wikström BM. Works of art as a pedagogical tool: an alternative approach to education. Creat Nurs. 2011;17:187–94. https://doi.org/10.1891/1078-4535.17.4.187
48. Slota M, McLaughlin M, Bradford L, Langley JF, Vittone S. Visual intelligence education as an innovative interdisciplinary approach for advancing communication and collaboration skills in nursing practice. J Prof Nurs. 2018; 34:357–63. https://doi.org/10.1016/j.profnurs.2017.12.007
49. Breedlove B. Living people who breathe and feel and suffer and love. Emerg Infect Dis. 2023;29:2184–5. https://doi.org/10.3201/eid2910.AC2910
50. Davtyan M, Farmer S, Brown B, Sami M, Frederick T. Women of color reflect on HIV-related stigma through PhotoVoice. J Assoc Nurses AIDS Care. 2016;27:404–18. https://doi.org/10.1016/j.jana.2016.03.003

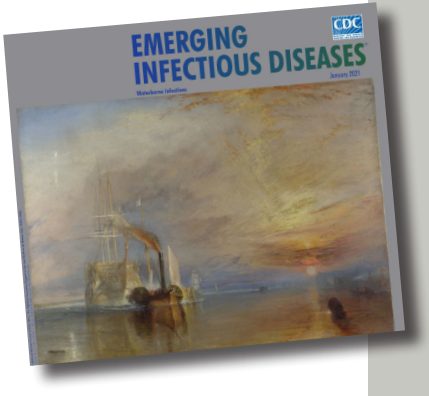
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etymologia revisited

Petri Dish

[pe'tre 'dish]

The Petri dish is named after the German inventor and bacteriologist Julius Richard Petri (1852–1921). In 1887, as an assistant to fellow German physician and pioneering microbiologist Robert Koch (1843–1910), Petri published a paper titled "A minor modification of the plating technique of Koch." This seemingly modest improvement (a slightly larger glass lid), Petri explained, reduced contamination from airborne germs in comparison with Koch's bell jar.



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References

1 Central Sheet for Bacteriology and Parasite Science [in German]. Biodiversity Heritage Library. Volume 1, 1887 [cited 2020 Aug 25]. https://www.biodiversitylibrary.org/item/210666#page/313/mode/1up
2. Petri JR. A minor modification of the plating technique of Koch [in German]. Cent für Bacteriol und Parasitenkd. 1887;1:279–80.
3. Shama G. The "Petri" dish: a case of simultaneous invention in bacteriology. Endeavour. 2019;43:11–6. https://doi.org/10.1016/j.endeavour.2019.04.001
4. The big story: the Petri dish. The Biomedical Scientist. Institute of Biomedical Science [cited 2020 Aug 25]. https://thebiomedicalscientist.net/science/ big-story-petri-dish

https://wwwnc.cdc.gov/eid/article/27/1/et-2701_article