



## **Prof. Dr. Axel A. Brakhage**

[Director](#) [Molecular and Applied Microbiology](#) · [Head of Department](#) [Transfer Group Anti-infectives](#) · [Acting head](#) +49 3641 532-1001 [axel.brakhage@leibniz-hki.de](mailto:axel.brakhage@leibniz-hki.de)

### **Curriculum vitae**

#### **Main Research Areas**

- Infection biology of human pathogenic fungi
- Molecular biotechnology / synthetic biotechnology of microbial compounds
- Microbial communication
- Eukaryotic gene regulation / transcription factors

## Professional Career

|            |                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------|
| since 2005 | Scientific Director, Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute (Leibniz-HKI) Jena |
| since 2005 | Head of Department Molecular and Applied Microbiology, Leibniz-HKI Jena                                                             |
| since 2004 | Professor (C4/W3) and chair in microbiology and molecular biology, Institute for Microbiology, Friedrich Schiller University Jena   |
| 2001-2004  | Professor (C4) and chair in microbiology, Leibniz University Hanover                                                                |
| 1998-2001  | Professor (C3) in microbiology, Technical University Darmstadt                                                                      |
| 1996       | Habilitation in microbiology, Ludwig-Maximilians-University Munich                                                                  |
| 1992-1998  | Research assistant (C1), Institute for Genetics and Microbiology, Ludwig Maximilian University of Munich                            |
| 1990-1992  | Research assistant, The University of Sheffield, UK, funded through postdoc grants of the DFG                                       |
| 1989-1990  | Group head, Biotechnology, BASF AG, Ludwigshafen                                                                                    |
| 1989       | Dr. rer. nat. in microbiology, „summa cum laude“ University Münster and Institut de Biologie Physico-Chimique (IBPC) Paris          |
| 1985       | Studies in biology/chemistry, diploma in biology at the Westfälische Wilhelms-Universität Münster                                   |

## Awards · Appointments · Scientific Activities

|            |                                                                                                                    |
|------------|--------------------------------------------------------------------------------------------------------------------|
| since 2020 | Vice President of the DFG                                                                                          |
| since 2020 | Head of section 13 "Microbiology and Immunology" and Senator in the German National Academy of Sciences Leopoldina |
| since 2020 | Board of Directors, Leibniz Center for Photonics in Infection Research (LPI)                                       |
| since 2020 | Founding member and Board of Directors "Incate" Incubator for Antibacterial Therapies in Europe                    |
| since 2019 | Member of the scientific panel of the Leibniz Institute of Virology (LIV), Hamburg                                 |
| since 2019 | Member of the foundation board of the Leibniz Institute for Immunotherapy (LIT), Regensburg                        |
| 2019-2022  | Spokesperson of the Excellence Cluster "Balance of the Microverse" (DFG)                                           |
| since 2018 | Member of the scientific panel of the Interdisciplinary Center for Clinical Research (IZKF), Münster               |

|            |                                                                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| since 2017 | Member of the Steering Committee DZIF/TTU Novel Antibiotics                                                                                                                       |
| since 2017 | Elected member of the American Academy of Microbiology                                                                                                                            |
| since 2017 | Member of the scientific panel of the Robert Koch Foundation (RKS), Berlin                                                                                                        |
| since 2017 | Member of the scientific panel of the MRC Medical Mycology Centre, Exeter, UK                                                                                                     |
| since 2016 | Member of the Clusterboard RIS3 Thüringen                                                                                                                                         |
| since 2016 | Member of the scientific panel of the Max Planck Institute for Infection Biology (MPIIB), Berlin                                                                                  |
| 2016-2020  | Spokesperson of the Leibniz Research Cluster "Biotechnologie 2020+"                                                                                                               |
| since 2015 | Elected member of the European Academy of Microbiology                                                                                                                            |
| since 2015 | Honorary member of the Deutschsprachige Mykologische Gesellschaft e.V. (DMyKG)                                                                                                    |
| 2014       | Main Research Award of the German Society for Hygiene and Microbiology (DGHM)                                                                                                     |
| since 2013 | Spokesperson of the SFB/Transregio 124 FungiNet (DFG)                                                                                                                             |
| 2013-2020  | Deputy representative of the Leibniz-Research-Alliance Compounds and Biotechnology                                                                                                |
| since 2013 | Board member of the research campus "InfectoGnostics" (BMBF)                                                                                                                      |
| since 2012 | Spokesperson of the consortium "InfectControl 2020 – New Anti-infection Strategies – Science • Society • Economy" in the BMBF-programme "Zwanzig 20 – Partnership for Innovation" |
| 2012-2016  | Representative of the DFG-Professional Council 204 Microbiology, Immunology, Virology                                                                                             |
| 2010-2012  | Board member of the Integriertes Forschungs- und Behandlungszentrum " <i>Center for Sepsis Control and Care</i> " (CSCC) at the University Hospital Jena                          |
| 2010-2018  | Authorised commissioner of the Leibniz Association for Biotechnology                                                                                                              |
| 2010-2018  | Member of the scientific panel of the Helmholtz-Centre for Infection Research (HZI), Braunschweig                                                                                 |
| 2010-2018  | Member of the scientific panel of the Institute for Pharmaceutical Research (HIPS), Saarbrücken                                                                                   |
| 2010-2020  | Member of the scientific panel of the Research Centre Borstel, Borstel                                                                                                            |
| 2010-2017  | Member of the scientific panel of the Leibniz Institute of Plant Biochemistry (IPB), Halle                                                                                        |
| 2009-2017  | Supervisory Board Leibniz-Institute DSMZ – German Collection of Microorganisms and Cell Cultures, Braunschweig                                                                    |
| 2009-2016  | Member of the scientific panel of the Research Center for Infectious Diseases (ZINF), Würzburg                                                                                    |
| 2009-2011  | President of the Vereinigung für Allgemeine und                                                                                                                                   |

|                         |                                                                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2008-2019               | Angewandte Mikrobiologie (VAAM)<br>Member of the university council (reappointment 2011+2015) at the Friedrich Schiller University Jena                        |
| 2008-2016               | Member of the DFG-Professional Council 204 Microbiology, Immunology, Virology                                                                                  |
| 2008                    | Appointed member of the Nationale Akademie der Wissenschaften, Leopoldina                                                                                      |
| 2007-2016               | Liaison Officer for scientific misconduct at the FSU Jena                                                                                                      |
| 2007-2020               | Spokesperson of the excellence graduate school „Jena School for Microbial Communication” (JSMC)                                                                |
| 2006-2008               | Spokesperson of the graduate school <i>"International Leibniz Research School (ILRS) for microbial and biomolecular interactions"</i>                          |
| 2006<br>since 2005      | Heinz-Seeliger award for infection biology<br>Scientific panel <i>"Goettinger Center for Molecular Bio/Sciences"</i> (GZMB), Georg-August-University Göttingen |
| 2005-2022               | Member of the Faculty Council of the Faculty of Biological Sciences, Friedrich Schiller University Jena                                                        |
| 2004-2010               | Representative of the DFG Priority Programme 1160 "Colonisation and Infection by Human-pathogenic Fungi"                                                       |
| 2003-2010               | Scientific panel „Center for Microbial Biotechnology“ DTU Copenhagen, Denmark                                                                                  |
| 2003-2009               | Member in the programme committee of the DFG Priority Programme 1152 <i>"Evolution of Metabolic Diversity"</i>                                                 |
| 2003-2004               | Dean, faculty biology, Leibniz-University Hanover                                                                                                              |
| 2002-2006,<br>2009-2020 | Member of the scientific panel of the Interdisciplinary Center for Clinical Research (IZKF), Würzburg                                                          |
| since 1998              | Editor of several magazines                                                                                                                                    |
| since 1995              | Principal investigator in EU projects                                                                                                                          |

## Topics

[A. fumigatus pathobiology and novel therapeutic strategies](#)

[Functional microbiome research and molecular biotechnology](#)

[Eukaryotic Transcription Factors](#)

[Pathogenicity and biodiversity of Mucorales](#)

## **Publications**

Müller R, König A, Groth S, Zarnowski R, Visser C, Handrianz T, Maufrais C, Krüger T, Himmel M, Lee S, Priest EL, Yildirim D, Richardson JP, Blango MG, Bougnoux ME, Kniemeyer O, d'Enfert C, Brakhage AA, Andes DR, Trümper V, Nehls C, Kasper L, Mogavero S, Gutschmann T, Naglik JR, Allert S, Hube B (2024) Secretion of the fungal toxin candidalysin is dependent on conserved precursor peptide sequences. *Nat Microbiol* 9(3), 669-683.

[Details](#)



Behrendt F, Pretzel D, Cseresnyés Z, Kleinsteinuber M, Wloka T, Radosa L, Figge MT, Gottschaldt M, Brakhage AA, Schubert US<sup>#</sup> (2023) Hydrophilic cryogels as potential 3D cell culture materials: Synthesis and characterization of 2-(methacrylamido) glucopyranose-based polymer scaffolds. *J Polym Sci* 61(23), 3039-3054.

## [Details](#)



Bigalke A, Krüger T, Jia LJ, Kniemeyer O, Brakhage AA (2023) Pathoproteomik des humanpathogenen Pilzes *Aspergillus fumigatus*. *BIOspektrum* (3), 269-272.

## [Details](#)



Garloff V, Krüger T, Brakhage A, Rubio I (2023) Control of TurboID-dependent biotinylation intensity in proximity ligation screens. *J Proteomics* 279, 104886.

## [Details](#)



Goldmann M<sup>\*</sup>, Schmidt F<sup>\*</sup>, Cseresnyés Z, Orasch T, Jahreis S, Hartung S, Figge MT, von Lilienfeld-Toal M, Heinekamp T, Brakhage AA<sup>#</sup> (2023) The lipid raft-associated protein stomatin is required for accumulation of dectin-1 in the phagosomal membrane and for full activity of macrophages against *Aspergillus fumigatus*. *mSphere* 8(1), e00523-22.

## [Details](#)



González K<sup>\*</sup>, Gangapurwala G<sup>\*</sup>, Alex J<sup>\*</sup>, Vollrath A, Cseresnyés Z, Weber C, Czaplewska JA, Hoeppener S, Svensson CM, Orasch T, Heinekamp T, Guerrero-Sánchez C, Figge MT, Schubert US, Brakhage AA (2023) Targeting of phagolysosomes containing conidia of the human pathogenic fungus *Aspergillus fumigatus* with polymeric particles. *Appl Microbiol Biotechnol* 107(2-3), 819-834.

[Details](#)



Jia LJ, Rafiq M, Radosa L, Hortschansky P, Cunha C, Cseresnyés Z, Krüger T, Schmidt F, Heinekamp T, Straßburger M, Loeffler B, Doenst T, Lacerda JF, Campos A, Figge MT, Carvalho A, Kniemeyer O, Brakhage AA<sup>#</sup> (2023) *Aspergillus fumigatus* hijacks human p11 to redirect fungal-containing phagosomes to non-degradative pathway. *Cell Host Microbe* 31(3), 373-388.e10.

[Details](#)



Kelani AA, Bruch A, Riviuccio F, Visser C, Krüger T, Weaver D, Pan X, Schaeuble S, Panagiotou G, Kniemeyer O, Bromley MJ, Bowyer P, Barber AE, Brakhage AA, Blango MG (2023) Disruption of the *A. fumigatus* RNA interference machinery alters the conidial transcriptome. *RNA* 29(7), 1033-1050.

[Details](#)



König S, Schroeder J, Nietzsche S, Heinekamp T, Brakhage AA, Zell R, Löffler B, Ehrhardt C (2023) The influenza A virus promotes fungal growth of *Aspergillus fumigatus* via direct interaction *in vitro*. *Microbes Infect* 26(3), 105264.

[Details](#)



Krespach MKC, Stroe MC, Netzker T, Rosin M, Zehner LM, Komor AJ, Beilmann JM, Krüger T, Scherlach K, Kniemeyer O, Schroeckh V, Hertweck C, Brakhage AA (2023) *Streptomyces* polyketides mediate bacteria-fungi interactions across soil environments. *Nat Microbiol* 8(7), 1348-1361.

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## Teachings

[Lecture Molekulare Biologie/Biotechnologie/Infektionsbiologie niederer Eukaryonten \(MMB009\) Prof. Dr. Axel A. Brakhage Details](#)

[Lecture Grundmodul „Mikrobiologie und Molekularbiologie“ \(MMB005\) Prof. Dr. Axel A. Brakhage Details](#)

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[Seminar Angewandte Mikrobiologie \(MBGW1.4.1\) Prof. Dr. Axel A. Brakhage Details](#)

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[Practical course Angewandte Mikrobiologie \(MBGW1.4.1\) Prof. Dr. Axel A. Brakhage Details](#)

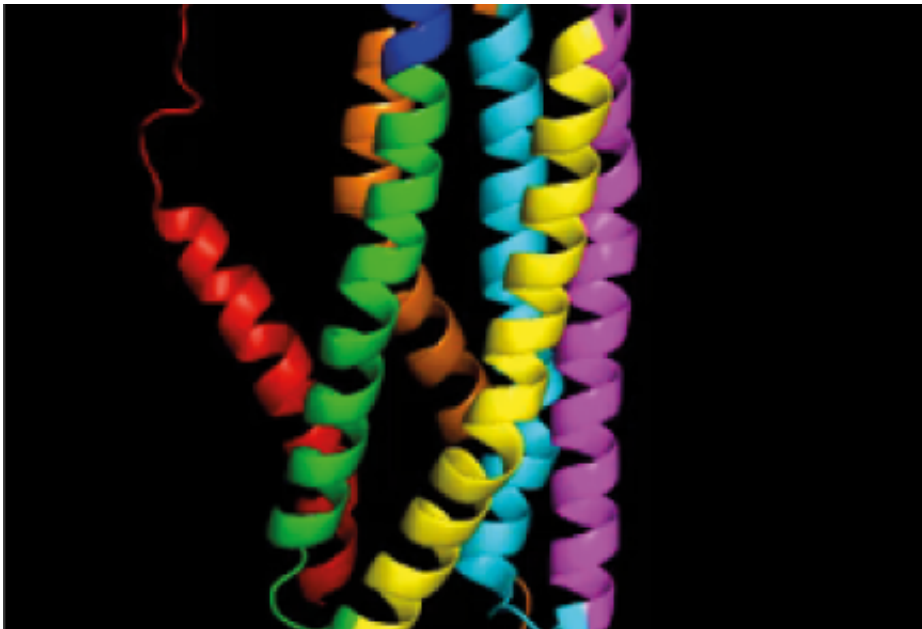
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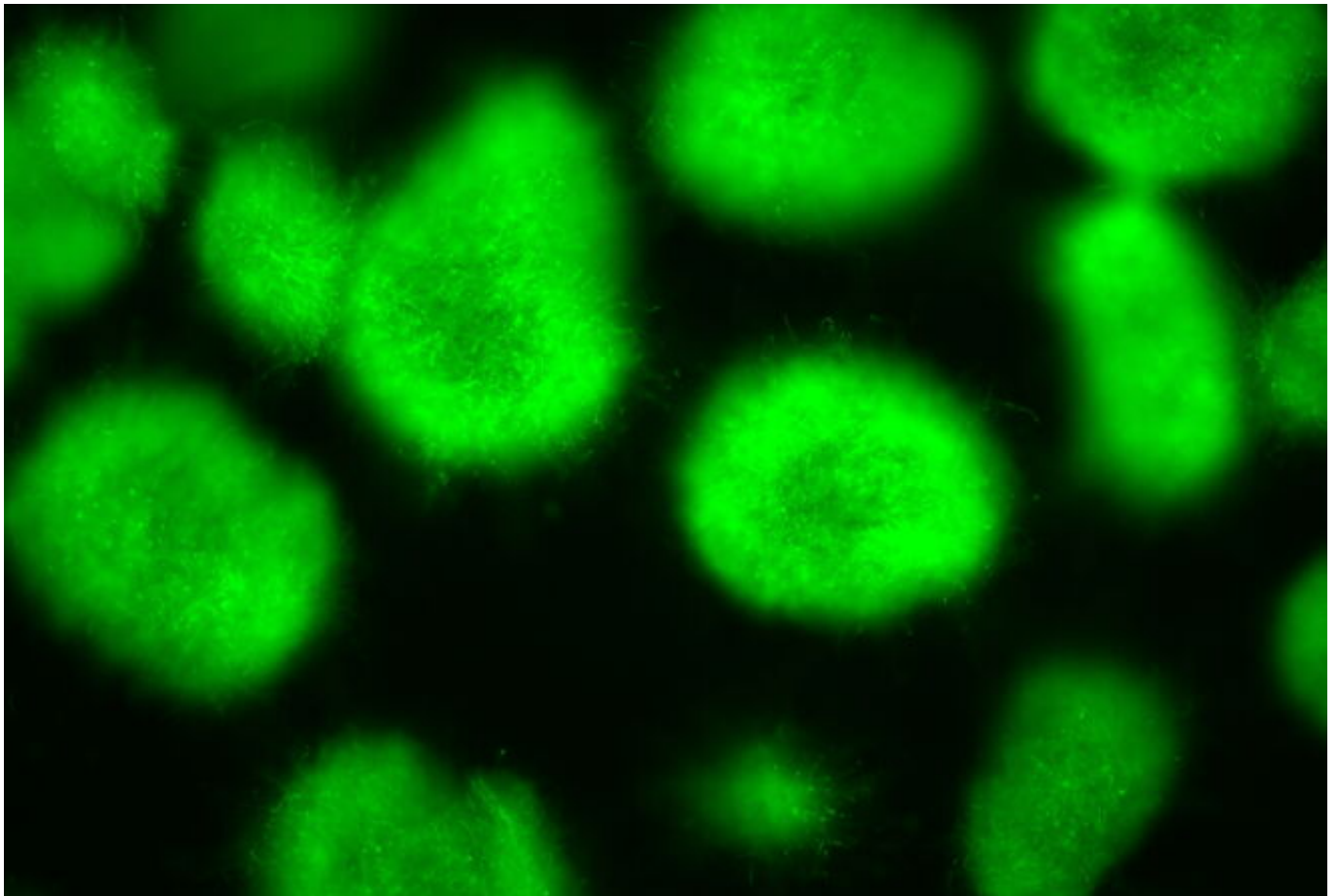


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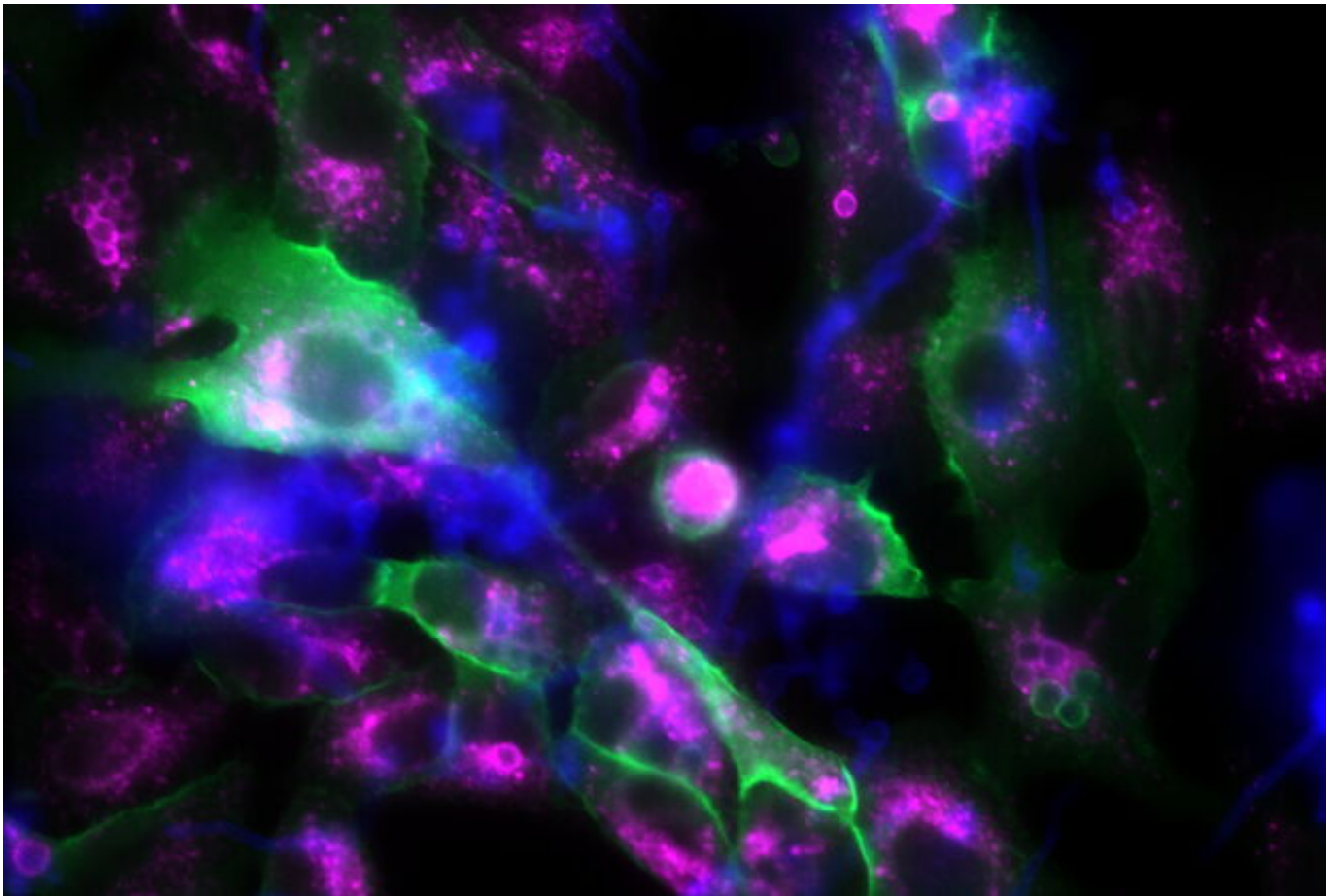


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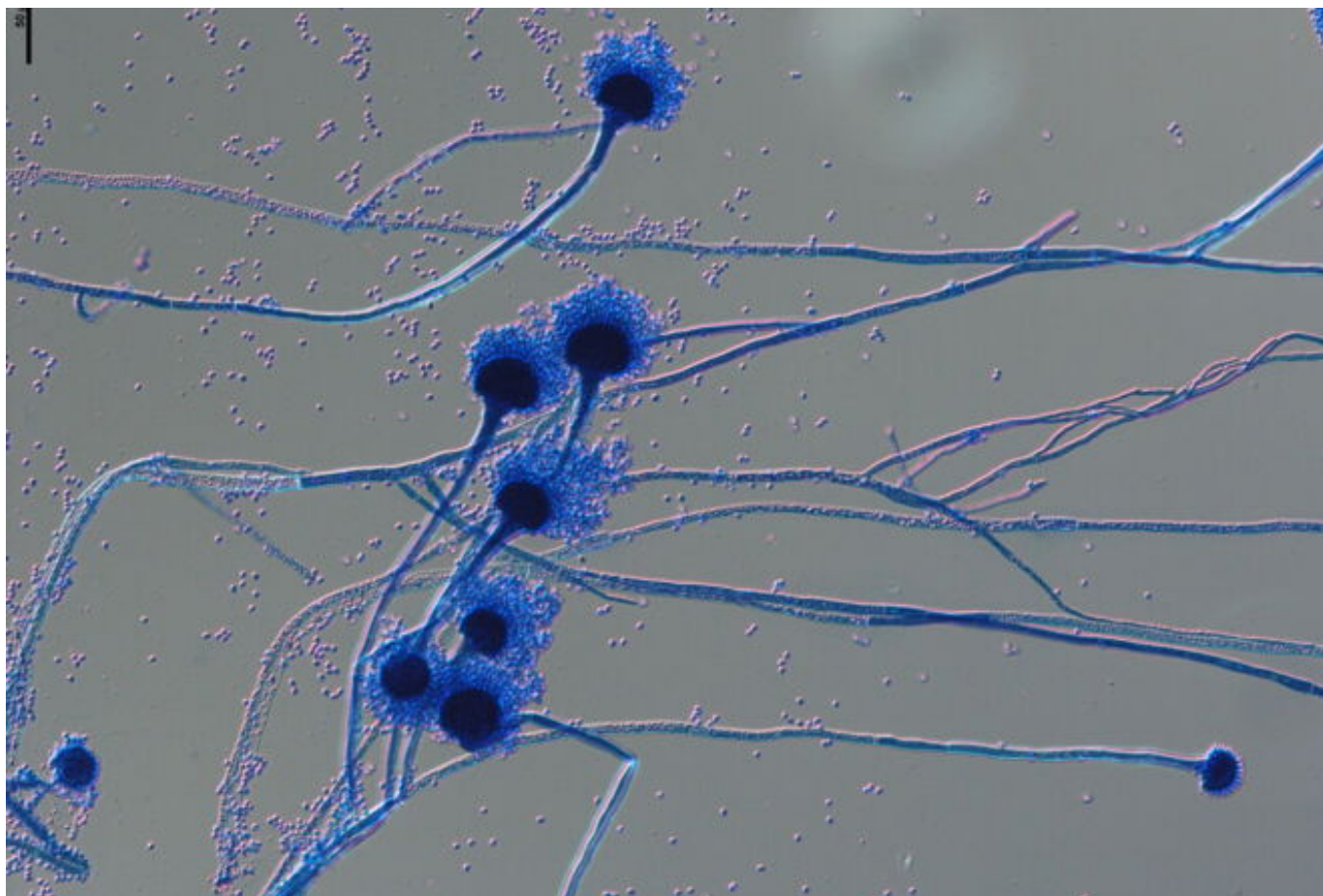


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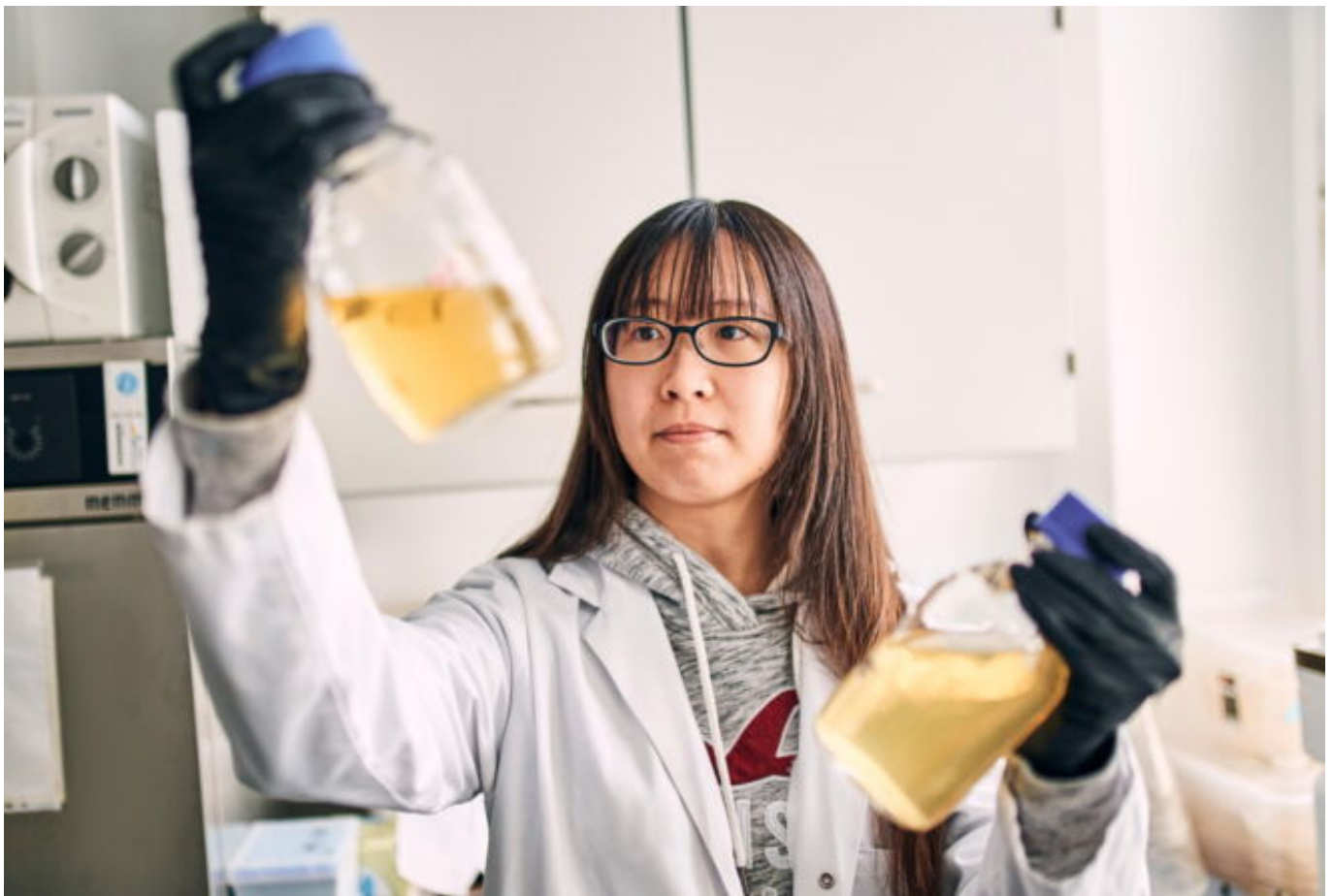
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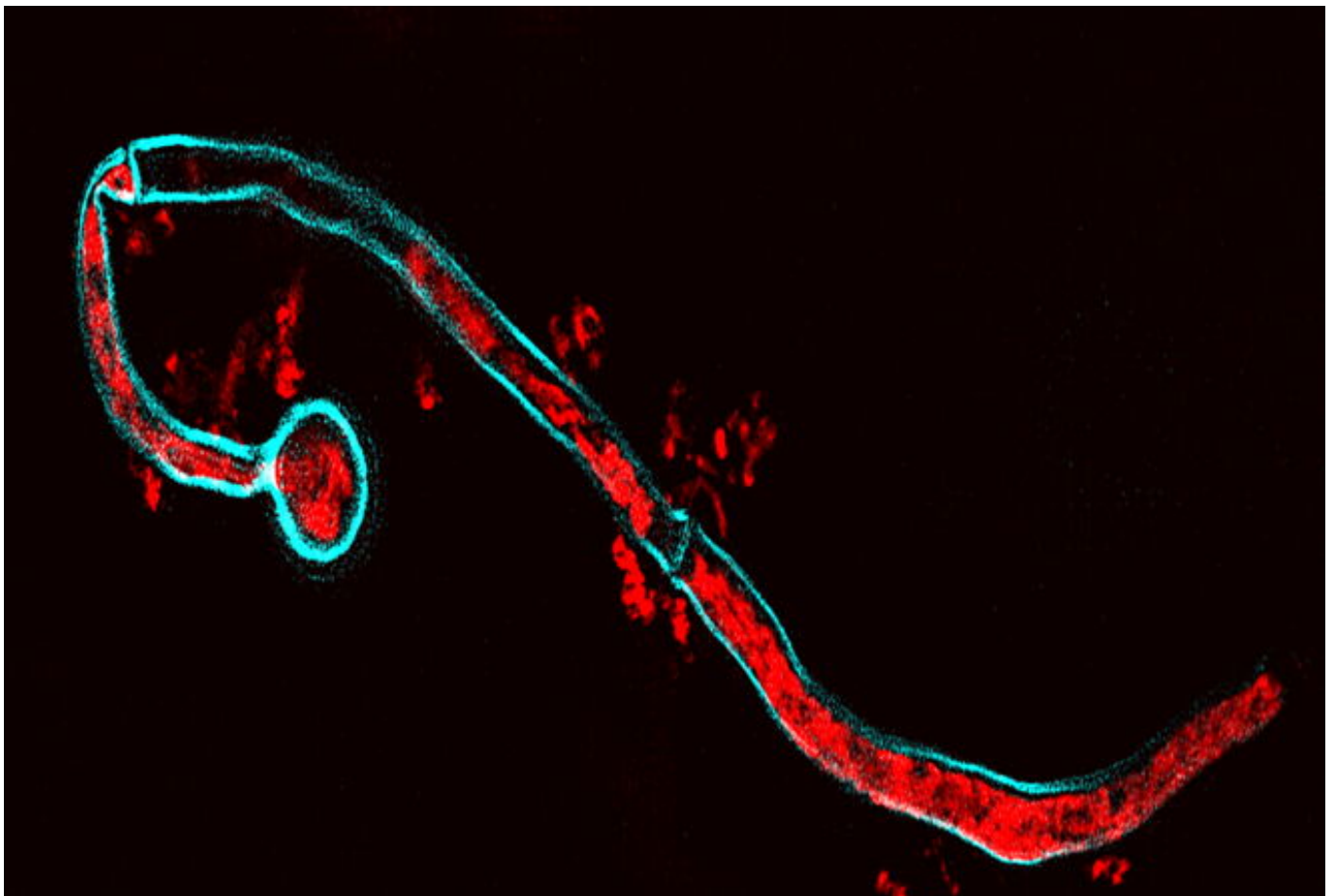
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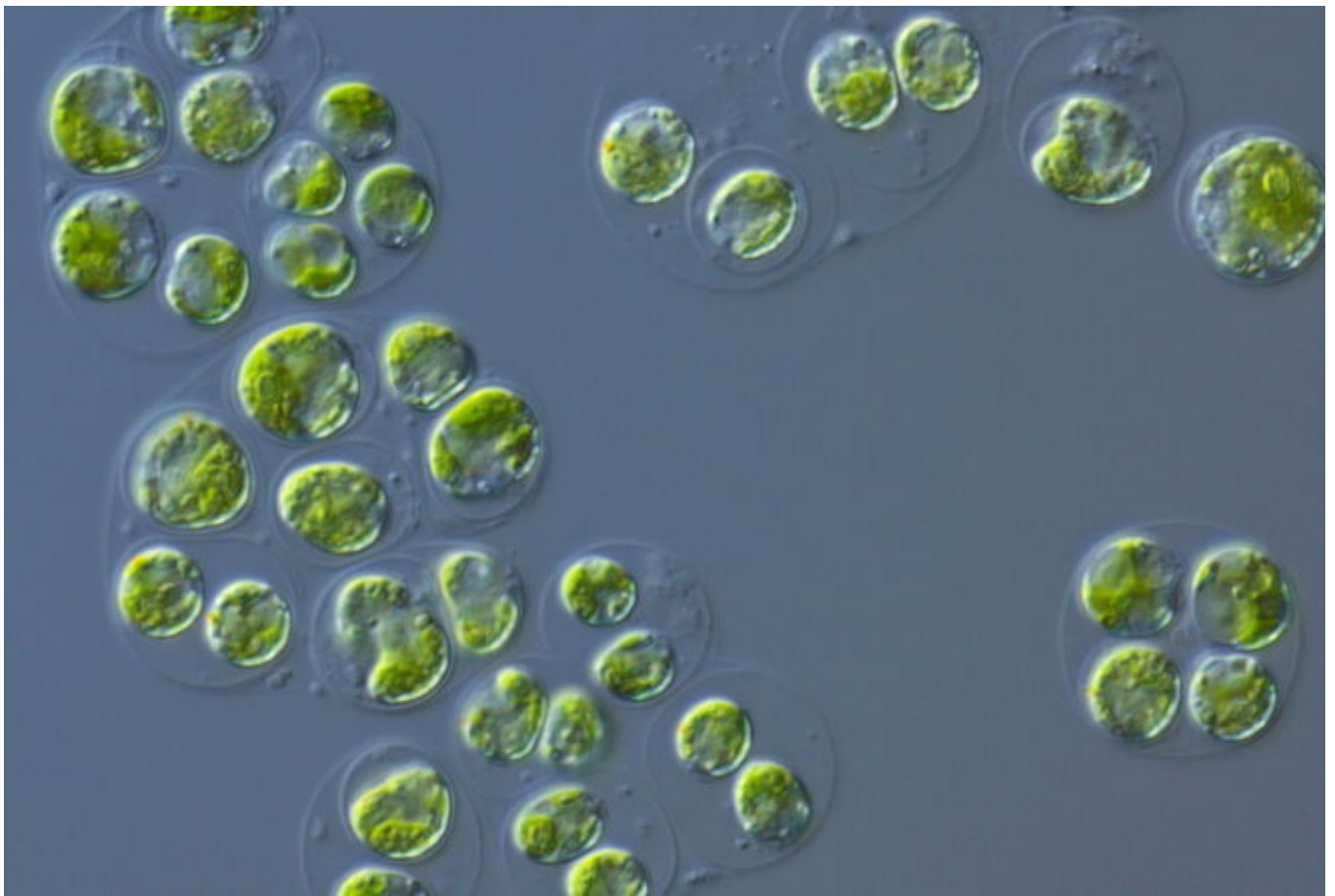
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