



FocalPlane

A community site for microscopists and biologists

Community sites run by the Company of Biologists



the Company of Biologists supporting biologists inspiring biology

Hosted by Development


THE NODE the community site for and by developmental biologists

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Development presents... November webinar October in preprints Adjusting to normal Monotreme ears and the evolution of mammal jaws

Genetics Unzipped: Heat, Stick, Duplicate, Repeat: The Story Of The Polymerase Chain Reaction (PCR)

Posted by [katarney](#) on November 5th, 2020



In this episode we're taking a look at the story and the characters behind one of the most transformative – and ubiquitous – techniques in modern molecular biology: the polymerase chain reaction.

Anyone who has worked with DNA in the laboratory is undoubtedly familiar with the polymerase chain reaction – PCR, as it's usually known. Invented in 1985, PCR is an indispensable molecular biology tool that can replicate any stretch of DNA, copying it billions of times in a matter of hours, providing enough DNA to use in sequencing or further research, or for applications like forensics, genetic testing, ancient DNA

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Weekly listings and occasional writing ideas



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preLights Preprint highlights, selected by the biological community

The *Drosophila* anterior-posterior axis is polarized by asymmetric myosin activation

Hélène Doerflinger, Vitaly Zimyanin, Daniel St Johnston

The silent conductor of cortical polarisation: asymmetric activation of Myosin-II orchestrates A/P axis establishment in *Drosophila*

Selected by [Giuliana Clemente](#)



Recent preLight posts

Recent preLight posts	My interests	Categories
Bioluminescent Genetically Encoded Glutamate Indicator for Molecular Imaging of Neuronal Activity <i>E. D. Petersen, E. L. Crespo, G. G. Lambert, et al.</i>	Circularly permuted LOV domain as an engineering module for optogenetic tools <i>Lequn Geng, Jiaqi Shen, Wenjing Wang</i>	STING mediates immune responses in a unicellular choanoflagellate <i>Arielle Woznica, Ashwani Kumar, Carolyn R. Sturge, et al.</i>



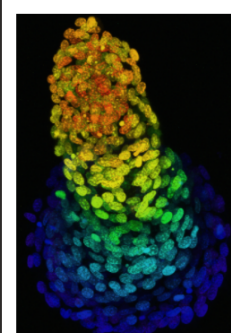
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Featured image



This maximum intensity z-projection of a nuclei-labeled cellular protrusion was submitted by Pau Guillaumat. Image stack was obtained with Multiphoton Confocal Microscopy and colormap indicates the depth.

Under strong circular confinement, myoblasts self-organize into nematic patterns featuring spiral and aster arrangements (integer topological defects), which direct the formation and growth of 3D cellular protrusions.

Pau is a materials' chemist and a scientist on active matter. He received his bachelor's degree from the University of Barcelona, where he did the PhD in the group of Profs. Jordi Ignés and Francesc Sagués on active gels.

Then he moved to Geneva to work in the group of Prof. Aurélien Roux to study self-organization principles inducing remodeling within cell monolayers. Pau is now working in the Institute for Bioengineering of Catalonia (IBEC, Barcelona), in the group of Prof. Xavier Trepat, where he designs self-organized biohybrid machines.

Other highlights

- Writing ideas for FocalPlane
- Going virtual: the successful experience of the I2K2020
- LSFM series – Surfing on the data freak wave! PART I: Knowing your turf, knowing your surf!
- Foldscope goes to the Peruvian Amazon!

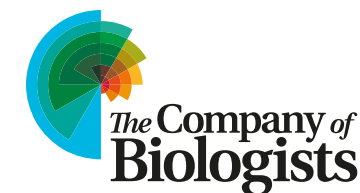
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Questions about FocalPlane?

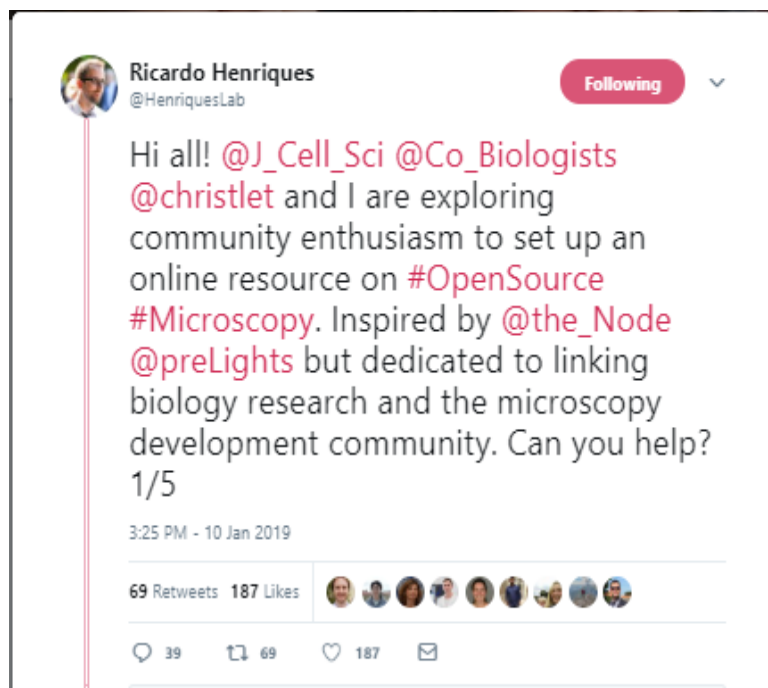
FAQs





A community site for microscopists and biologists

Christophe Leterrier and Ricardo Henriques around this time spotted a similar gap in the market



The enthusiasm from the microscopy community secured the support of The Company of Biologists and gave the go-ahead for the development of the website and the FocalPlane project started



FocalPlane

Where biology meets microscopy





Scientific Advisory Board



Ricardo Henriques

University College
London and The
Francis Crick
Institute, London, UK



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Leterrier**

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FocalPlane content



FocalPlane

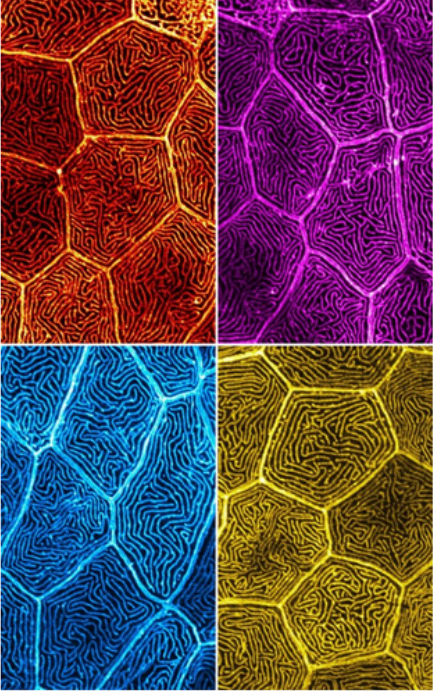
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Featured image



The apical surface of epithelial cells is thrown into laterally long actin rich protrusions, termed microridges. The image depicts microridges on the epidermal cells in a 3-day old zebrafish embryo which function as actin reservoirs to help in mucous retention and abrasion resistance.

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Other highlights

- [FocalPlane user survey](#)
- [Technology highlights – Structured Illumination Microscopy \(SIM\)](#)
- [LSFM series – Surfing on the data freak wave! PART I: Knowing your turf, knowing your surf!](#)
- [A career path to bioimage analysis](#)
- [Foldscope goes to the Peruvian Amazon!](#)

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Topics

Discussions



How to



Tools



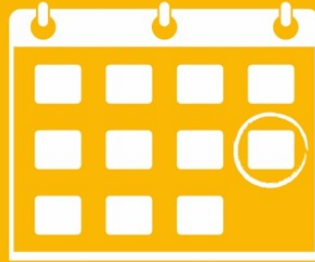
Case studies



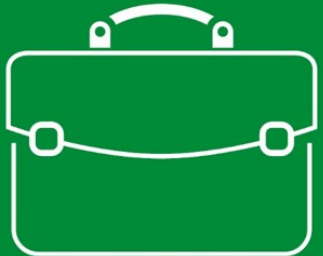
Interviews



Events



Jobs



Education

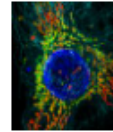


Blog series



British Society for Cell Biology competitions

Posted by FocalPlane, on 16 June 2021



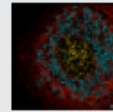
Hello cell biologists. The BSCB has two looming deadlines for 1) our image competition, and 2) our science writing competition. Deadline for applications is June 30th 2021. Cash prizes awarded to winning entries. For competition details visit [BSCB.org](https://www.bscb.org). Entries can be sent to Stephen.Robinson@quadram.ac.uk.

[Read more](#)

Turn Your Inverted Microscope into a Multimodal Nanoscope

OLYMPUS

Sponsored by Olympus, on 14 June 2021



Among recent nanoscopy techniques that break the diffraction limit, single-molecule localization microscopy (SMLM) contributes to major discoveries in medicine and biology. It is now possible to see how subcellular molecular machineries form and behave inside single cells and to quantify single biological molecules such as proteins, nucleic acids, and lipids, at ultralow concentrations inside the

[Read more](#)

A First Exposure to Super-Resolution Microscopy

Posted by Afonso Mendes, on 11 June 2021



Biomedical research encompasses several fields of expertise involving complex biological topics and technologies. Studying a given subject is a process that takes years, decades, and sometimes a lifetime to complete. Consequently, researchers tend to become highly familiar with a specific subset of scientific topics and experimental approaches.

However, they are often confronted with the cumbersome

[Read more](#)

Phototoxicity - the good, the bad and the quantified.

Posted by Philippe Laissue, on 14 May 2021



Our virtual meeting on phototoxicity was held in late January 2021, generously sponsored by the European Microscopy Society and enabled by the Royal Microscopical Society. In four hours, spread over two days, the five organisers and twenty invited participants discussed the problem of phototoxicity in live imaging, and how we can start to tackle this

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All content is categorised into **9 topics**. A registered user/contributor's post appears in the blog section of the homepage in the order of the date posted

Anyone can post!

Topics

Discussions



How to



Tools



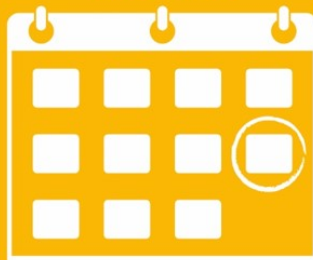
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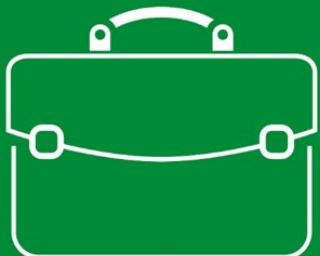
Interviews



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Education



Blog series



News digest

Posted by FocalPlane, on 11 June 2021



Here is a selection of interesting news, publications and discussions related to microscopy that happened in the past two weeks. Thank you to our 'FocalPlane reporters': Martin Jones, Manish Kumar, Andrey Andreev and Parash Prasad who helped us create this list. Twitter Microscopes and imaging tools: REALM, adaptive optics for single-molecule localisation <https://twitter.com/MarijnSiemons/...> Excitation optics

[Read more](#)

Hot reads

Posted by FocalPlane, on 8 June 2021



Today we start a new monthly post. We have asked three researchers to propose their three favourite recently published papers (related to microscopy, of course). You might be up to date with the recent literature in your field of research, but what about other disciplines? We hope this list, provided this month by Claudia Almeida,

[Read more](#)

Preparing your manuscript: guidelines for writing microscopy methods and figures

Posted by FocalPlane, on 25 May 2021



A new paper has caught your eye on Twitter or Pubmed based on the title. Next step? A quick look at the abstract. Still interesting? Let's have a look at the figures. This is probably the most important element of the paper to attract the interest of the reader. If figures are easy to interpret


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You will also find some posts we prepare in-house.



Blog series

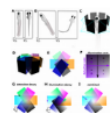
2P-DSLM - 2P3A-DSLM - 2P-SPIM - 2PE-SPIM - 2PE-ISPM - 2PLS-SOFI - 3D LSM - 3P LSFM - Adaptive SPIM - AFM-LS - aLSFM - aLSFMM - AO-LSFM - AO-SPIM - ASLM - BBPI - c-LSFM - csiLSFM - CLSM - COLM - compactLSFM - CTLS - DC LSF IFC - DiaSLM - diZCLSM - diSPIM - DIY-SPIM - doSPIM - DSLM - DSLM-SI - Edu-SPIM - EzDSLM - FL-DSLM - FLIM-SPIM - OPFOS - IML-SPIM - InVi-SPIM - InVi-SPIM PM LS - ISPM - LEMOLISH - L-OpenSPIM - LLS - LLSFM - LightSheet - LLSM - LLSDM - LSF IFC - MesoSPIM - miniSPIM - muSPIM - MuVi-SPIM - LS PM - Muvi SPIM CS - OpenSPIM Farm - Open OPTISPM - oSPIM - OTLS PLIF - pLSFM - PLST - RLMS - SCAPE - sidesSPIM - SPIM selective - SPIM FCCS - SPIM-fluid - SPIM-soSPIM - socSPIM - MISERB - STED-SPIM - OpenSPIM - TC-LSFM - TILT3D - TLS-SPIM - TISM - TSUM - TruLive3D - Ultramicroscope - BTLSM - WAO-SPIM - X-OpenSPIM



Create your own space on FocalPlane to post your blog series posts.

LSFM series – Surfing on the data freak wave! Part II: Before imaging: Know your sample (geometry)

Posted by Elisabeth Kugler, on 10 October 2020



This post, part of the blog series "LSFM series – Surfing on the data freak wave!", discusses (a) Sample preparation, (b) Light interaction with matter, (c) sample alignment and (d) checking fluorescence and calibration

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LSFM series – Surfing on the data freak wave! PART I: Knowing your turf, knowing your surf!

Posted by Elisabeth Kugler, on 5 September 2020

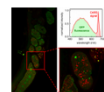


Here we present a series of five blog posts with tips and tricks about light sheet microscopy. 1. The basics of LSFM (Sept 2020) 2. Improving sample mounting (Oct 2020) 3. Calibration and Acquisition (Nov 2020) 4. Tailoring the data (Dec 2020) 5. What is next? AI and smarter than us LSFM (Jan 2021)

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Technology highlights - Coherent Anti-Stokes Raman Spectroscopy (CARS)

Posted by Johanna Bischof, on 28 October 2020



Interview with Antti Isomäki, PhD from the Biomedicum Imaging Unit of the University of Helsinki, Finland and Dalibor Pánek, PhD from the BIOCEV in Prague, Czech Republic. Tell us a bit about who you are and where your facility is based. AI: My name is Antti Isomäki and I am an optical physicist by training.

[Read more](#)

Technology highlights - Spinning Disk Microscopy

Posted by Johanna Bischof, on 14 October 2020



Interview with Stoyno Stoyanov, Ph.D. from the Center of Advanced Microscopy, Bulgarian Academy of Sciences, Bulgaria. Tell us a bit about the facility you run and what your focus is. The Bulgarian Node of Euro-Bioimaging ERIC is based in the Institute of Molecular Biology of the Bulgarian Academy of Sciences, Sofia. Our node is part

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Technology highlights – Structured Illumination Microscopy (SIM)

Posted by Johanna Bischof, on 30 September 2020

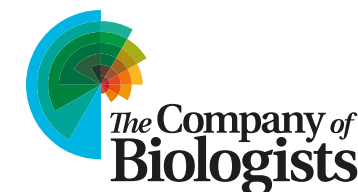


Interview with Ivan Novotný, Ph.D., from the Light Microscopy Core facility at the Institute of Molecular Genetics, in Prague, Czech Republic. Please tell us a bit about yourself and the facility where you work. I am employed as an imaging specialist at the Light Microscopy Core facility at the Institute of Molecular Genetics of the


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By Elisabeth Kugler and
Emmanuel Reynaud

By Johanna Bischof



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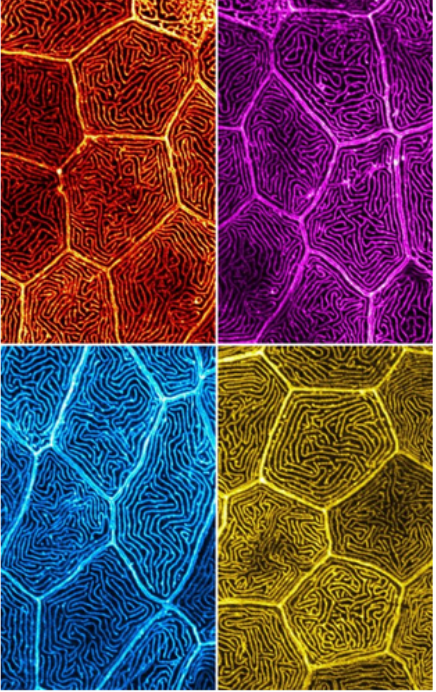
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Featured image



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Other highlights

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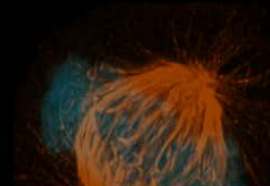
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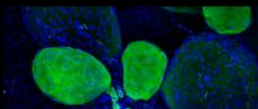
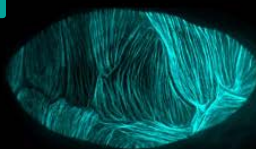
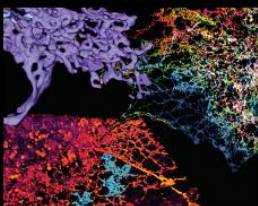
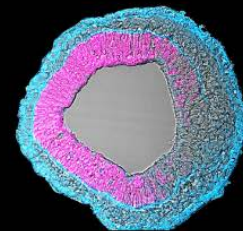
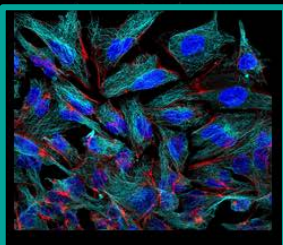
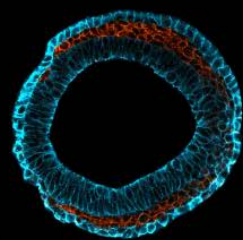
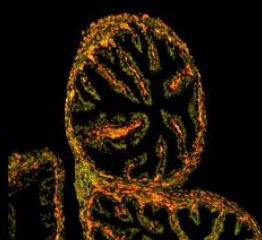


Gallery

Recent gallery additions



Cell in metaphase



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(SPIM / Light sheet)

Total internal reflection fluorescence
(TIRF) microscopy

Electron microscopy

Multi-photon microscopy

Label-free microscopy

Dyes

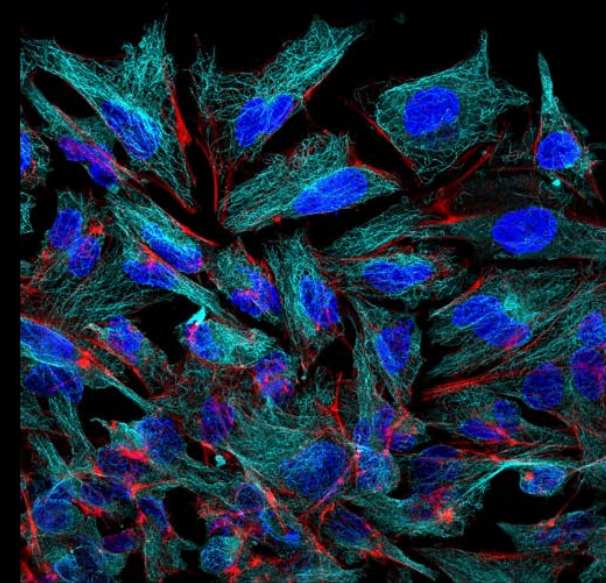
The image ^

The author v




Sophie Morgani

I am a first-generation student from the West Midlands, UK. I obtained a Bachelor's degree in Biochemistry from the University of Manchester and, during this time, developed a keen interest in stem cell biology that I went on to pursue as a PhD at the Centre for Regenerative Medicine, University of Edinburgh. I am currently a joint post-doctoral fellow between the Cambridge Stem Cell Institute, UK and Memorial Sloan Kettering Cancer Center, New York, USA. I am a massive fan of early embryology and love acquiring beautiful images to communicate science to a wide audience.




Pluripotent epiblast stem cells

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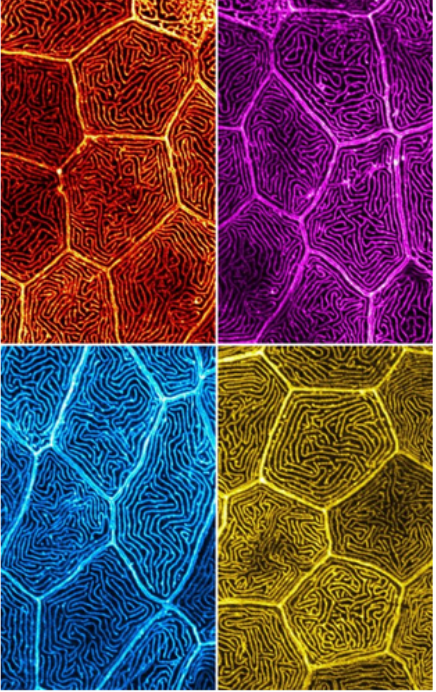
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Featured image



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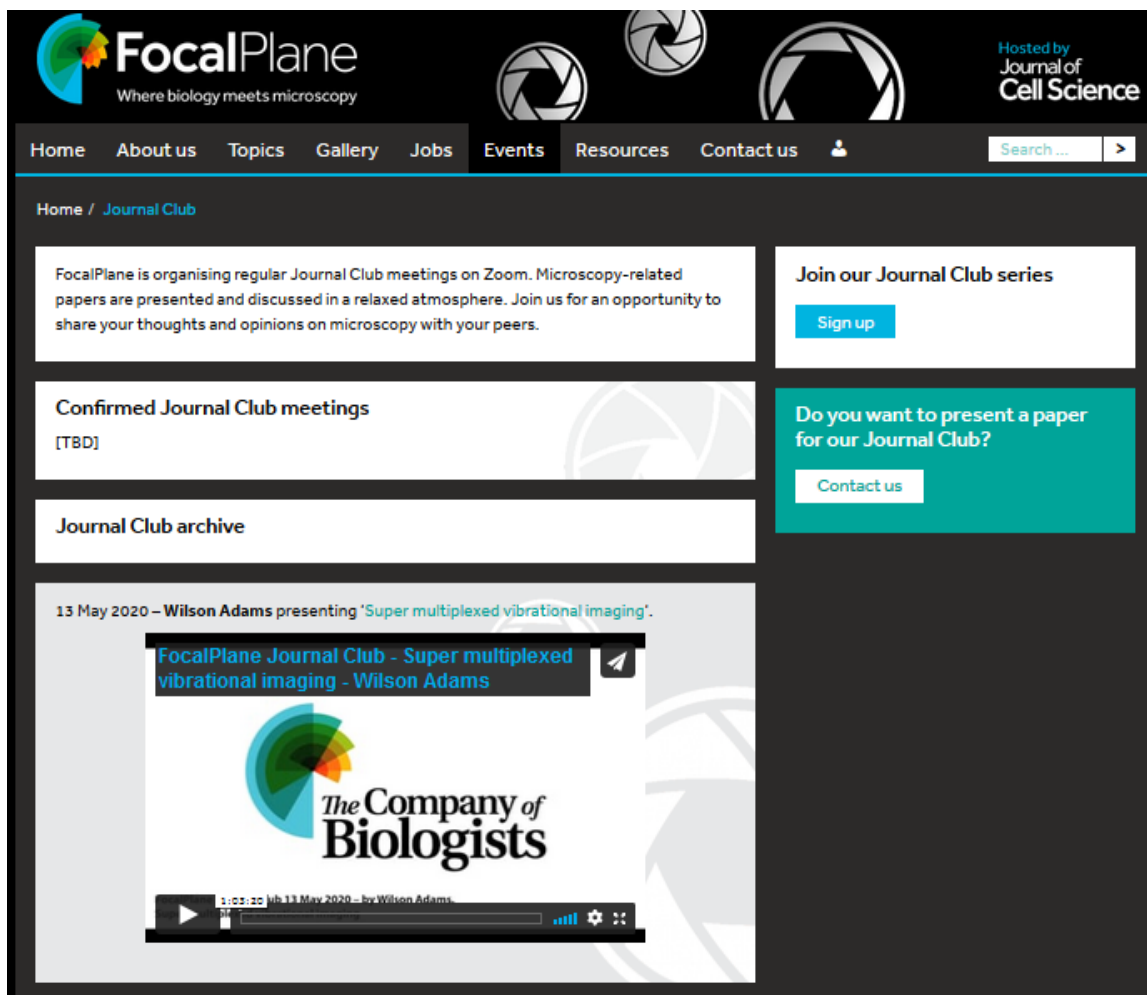
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FocalPlane is organising regular Journal Club meetings on Zoom. Microscopy-related papers are presented and discussed in a relaxed atmosphere. Join us for an opportunity to share your thoughts and opinions on microscopy with your peers.

Join our Journal Club series
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Confirmed Journal Club meetings
[TBD]

Journal Club archive

13 May 2020 – Wilson Adams presenting 'Super multiplexed vibrational imaging'.

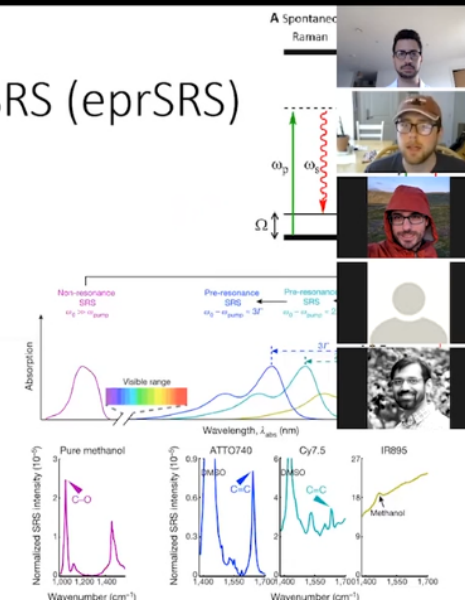
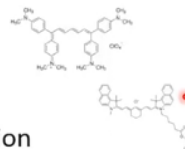
FocalPlane Journal Club - Super multiplexed vibrational imaging - Wilson Adams

The Company of Biologists

1:02:20 July 13 May 2020 - by Wilson Adams

Electronic Pre-Resonance SRS (eprSRS)


- ω_0 is dependent on molecular absorption
 - Dye-dependent,
- $\omega_{\text{pump}} \rightarrow \omega_0$ (molecule-dependent)
 - Significantly increased background
 - electronic resonant background
 - Competing 4-wave mixing
 - Significantly increase SRL activity
- IR895 = 895nm absorption
- Cy7.5 = 775nm absorption
- ATTO740 = 760nm absorption





- 10 online journal club meetings since launch
- Currently accepting suggestions for papers and preprints to cover
- Contact me if you want to organise one





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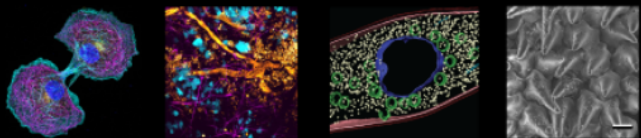
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A new microscopy webinar series



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We are excited to announce our new webinar series FocalPlane features..., covering all aspects of microscopy, from technology development to cell biology applications to image analysis.

On the first Tuesday of every month, an invited speaker will talk about their research involving microscopy. The talks will be hosted in the platform Remo, our browser-based conferencing platform ([read our guide to using Remo](#)). Following the Q&A session, we will host a more informal session especially designed for early-career researchers to meet the speaker. In order to facilitate the conversation, a maximum of 7 people will meet with the speaker at a time. During this session, we will have two more 'tables' available: one for FocalPlane, hosted by Esperanza Agullo-Pascual, and another for Journal of Cell Science Editors, so you will also have the chance to meet and speak with us if you would like to.

Subscribe to our mailing list [here](#) to receive details about upcoming webinars as they are announced.

Webinar followed by meet-the-speaker session aimed at ECRs



FocalPlane on Slack

The screenshot shows the Slack interface for the FocalPlane workspace. On the left is a dark sidebar with navigation options: Threads, All DMs, Mentions & reactions, More, and Channels. The Channels list includes # general (selected), # instagram, # journal-club, # random, # seminar-series, and an option to Add channels. Below Channels is a section for Direct messages with a list of contacts including Slackbot and several team members. The main area displays the #general channel. At the top, there's a search bar and a header with the channel name and a star icon. A post from 'Esperanza' at 15:52 on 'Yesterday' is visible, containing a link to a FocalPlane article and a thumbnail image of two microscopy panels labeled 'tdTomato' and 'GCaMP6s'. Below the post are reaction icons and another message from 'Esperanza' at 15:58 asking for community input. Further down, messages from 'Ricardo Henriques' are shown. At the bottom is a text input field for sending a message to #general, accompanied by formatting and action icons.

A place for discussing published or future posts, networking, and chatting about anything microscopy related.

Thank you!

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