



# ROBOTICS & AUTOMATION 2022

A CONFERENCE JOINTLY  
ORGANISED BY ELRIG AND SLAS

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30TH NOVEMBER & 1ST DECEMBER 2022  
FESTO, ESSLINGEN,  
STUTTGART

#ELRIG

#R&A22


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 SLAS (Society for  
Laboratory Automation  
and Screening)

# WELCOME TO ROBOTICS & AUTOMATION 2022

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Over the last decade the life science industry has increasingly made use of robotics to automate specific processes, which when used in combination with artificial intelligence and machine learning are now having an immense and profound impact on the speed and success of the drug discovery process.

The conference will be hosted from Festo's site in Esslingen, near Stuttgart. The two days of the meeting will showcase innovation in the application of automation with exciting and informative presentations from world leading speakers in industry, academia and leading technology providers. We are especially pleased to have 2 excellent keynote presentations. Professor Mimi Hii from Imperial College London, UK will talk about the challenges and opportunities around automating the chemical discovery process, and Professor Ross King from the University of Cambridge and Chalmers Institute of Technology, Sweden will talk about the development and implementation of "robot scientists" Adam, Eve and Genesis.

The interactive event will have four sequential sessions covering the application and interaction of robotics and automation in the more traditional biological and chemical sciences. We also have a session exploring exciting applications and innovations in diverse applied sciences. The final section will be a future looking session where we discuss how recent innovations and the application of artificial intelligence are being used to find new ways of solving problems in the laboratory environment.

The podium program is complemented by presentations from leading providers in the automation software and hardware spaces. This, together with the vendor exhibition

will provide a unique opportunity to engage with laboratory and industrial automation experts, informaticians, and software developers and to learn more about the latest instrumentation and developments offered by vendors in the robotics & automation space.

The organisation of this meeting required hard work and dedication from many individuals. We would like to thank the ELRIG and SLAS operations team, Clare Cockerham, Tara Shanks and Sanj Kumar for their administrative support, and Jürgen Böck, Global Business Development Manager, from Festo for his help with hosting the conference. ELRIG is a not-for profit organisation whose mission is to provide outstanding, leading-edge knowledge to the life sciences community on an open access basis. SLAS is an international professional society of academic, industry and government life sciences researchers, advancing scientific innovation by providing education, collaboration and professional development that unites scientists across disciplines to transform research. This event would not be possible without the generous support of the exhibitors, please do take some time to engage with them during the refreshment breaks.

We hope that you all enjoy the symposium over the next two days and look forward to meeting you!

## CONFERENCE DIRECTORS



**Katie Hansel**  
Senior Scientist,  
AstraZeneca



**Helen Plant**  
Associate Director  
HTS Automation Team  
AstraZeneca



**Jack Dawson**  
VP European Operations,  
HighRes Biosolutions



**Matthias Freundel**  
Group Lead,  
Fraunhofer IPA

# PLENARY KEYNOTE SPEAKERS

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**Mimi Hii**  
Professor of Catalysis, Imperial College London

## **AUTOMATING THE CHEMICAL DISCOVERY PROCESS: CHALLENGES AND OPPORTUNITIES**

30th November 2022, 09.35

The Auditorium

The 21st Century promises to be the golden age for digital technologies, which in turn, challenges the practice of synthetic chemistry. The vision for 'lab of the future' is the greater integration of automated equipment with data workflows.

In this presentation, I will describe our efforts in inaugurating a centralised automated research facility

(ROAR) in the U.K., to support training of early career researchers, as well as supporting technical needs of SME's. Our attempts to integrate automated data-led processes in our research will be demonstrated with a few case studies, including high-throughput screening in continuous flow and online analytical methods.



**Ross King**  
Professor, Department of Chemical Engineering and Biotechnology, University of Cambridge

## **AUTOMATING SCIENCE USING ROBOT SCIENTISTS**

1st December 2022, 09.35

The Auditorium

A Robot Scientist is a physically implemented robotic system that applies techniques from artificial intelligence to execute cycles of automated scientific experimentation. A Robot Scientist can automatically execute cycles of hypothesis formation, selection of efficient experiments to discriminate between hypotheses, execution of experiments using laboratory automation equipment, and analysis of results. The motivation for developing Robot Scientists is to both to better understand the scientific method, and to make scientific research more efficient. The Robot Scientist 'Adam' was the first machine to autonomously discover scientific knowledge. The Robot Scientist 'Eve' was originally developed to automate early-stage drug development,

with specific application to neglected tropical disease such as malaria, it is now working on anti-COVID drugs. I am now working on Genesis, a third-generation Robot Scientist designed to work on yeast systems biology. Genesis will be able to run 10,000 cycles of hypothesis-led experiment in parallel per day. In the future I believe that it is likely that advances in AI and lab automation will drive the development of ever-smarter Robot Scientists. Therefore, I am co-organising the 'Nobel Turing Challenge' to develop: AI Robots capable of making Nobel- quality scientific discoveries highly autonomously at a level comparable, and possibly superior, to the best human scientists by 2050.

# TRACK SUMMARY

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30th November 2022  
The Auditorium

## SESSION CHAIRS

**Katie Hansel**  
AstraZeneca  
**Jack Dawson**  
HighRes Biosolutions

### Applications & Innovations in Chemistry

Automation can be applied to many types of chemistry at any scale, with the last decade witnessing an explosion in its application. This session will focus on recent applications and innovations to fully automate multiple protocols and workflows, meeting the challenges of rapid scale-up & optimisation in the synthesis of novel chemical entities.

### Applications and Innovations in Applied Sciences

This session invites you to step outside of the traditional lab automation comfort zone and explore how robotics can be applied to more diverse application areas. Topics covered include bio-microfluidics, soft robotics and high throughput bio-analysis.

08.30-09.15	Registration
09.15-09.25	Site Welcome - Dr. Ansgar Kriwet, Festo - Member of the Management Board, Research and Development
09.25-09.30	Event Welcome - Paul Kendall, ELRIG & Vicki Loise, SLAS
09.30-09.35	Conference Director & Keynote Introduction - Helen Plant, AstraZeneca
09.35-10.20	Plenary Keynote - <b>Automating the chemical discovery process: Challenges and Opportunities</b> - Prof Mimi Hii, Imperial College
10.20-10.50	Platinum Presentation - <b>The ideal automation partnership – from conceptual design to laboratory implementation</b> - Niels Kruize on behalf of Molgen and Synchronlab
10.50-11.30	Refreshment Break
11.30-11.35	Session Chair Introduction - <b>Applications &amp; Innovations in Chemistry</b> - Katie Hansel, AstraZeneca
11.35-12.05	<b>A Cloud-based AI-driven Autonomous Lab</b> - Matteo Manica, IBM
12.05-12.35	<b>Flow synthesis of a macrocyclic molecular hinge</b> - Anna Slater, University of Liverpool
12.35-13.05	<b>What does it take to automate chemistry?</b> - Michael Kossenjans, AstraZeneca
13.05-14.10	Refreshment Break with Poster Session 13.30-14.00
14.10-14.15	Session Chair Introduction - <b>Applications and Innovations in Applied Sciences</b> - Jack Dawson, HighRes Biosolutions
14.15-14.45	<b>Scaling Up, and Down, Spheroid based Drug Screening with Droplet Microfluidics</b> - Håkan Jönsson, Science for Life Laboratory
14.45-15.00	Refreshment Break
15.00-15.30	<b>Hydraulically Amplified Self-Healing Electrostatic Actuators: working principles and potential applications in medical devices</b> - Ellen Rumley, Max Planck Institute for Intelligent Systems
15.30-16.00	<b>Modern Bioanalysis – Our Journey towards Lab4.0</b> - Andreas Luippold, Boehringer Ingelheim
16.00-18.00	Networking

# TRACK SUMMARY

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1st December 2022  
The Auditorium

## SESSION CHAIRS

**Helen Plant**  
HTS Automation, Team AstraZeneca  
**Matthias Freundel**  
Fraunhofer IPA

### Applications & Innovations in Biology

Automation is often utilised in the drug discovery process, leveraging robotics and automated processes to ease repetitive tasks and facilitate the execution of cellular or biochemical experiments. This session will describe the challenges and advances in automating a range of biological processes, including reagent production, preparation, screening and analysis.

### Applications & Innovations in Robotics & Artificial Intelligence

The widespread and cheap availability of technology enables laboratories to find new ways of solving problems. Robotics and AI in particular have the potential to massively change processes. This session shows examples of the use of these technologies.

09.00-09.30	Registration
09.30-09.35	Event Welcome - Katie Hansel, AstraZeneca
09.35-10.20	Plenary Keynote - <b>Automating Science using Robot Scientists</b> - Prof Ross King, University of Cambridge
10.20-10.50	Refreshment Break
10.50-10.55	Session Chair Introduction - <b>Applications &amp; Innovations in Biology</b> - Helen Plant, AstraZeneca
10.55-11.25	<b>Automation of organoid assays for drug screening</b> - Eva Riegler, NEXUS
11.25-11.40	Industry Insider Sponsorship - <b>Automating Flow Cytometry for Drug Discovery and Screening</b> - Richard Cuthbert, Bio-Rad
11.40-12.10	<b>Automating a high throughput Covid-19 workflow – how we built the Rosalind Franklin Laboratory</b> - Rob Howes, UKHSA
12.10-12.15	Bronze Sponsorship - <b>Modularity in Automation of Biological workflows</b> - Marcus Kroll, FESTO
12.15-12.45	<b>qPCR workstreams for expedite drug discovery in a dynamic modular automation ecosystem</b> - Valentina Romeo, Roche
12.45-13.50	Refreshment Break with Poster Session 12.30-13.00
13.50-13.55	Session Chair Introduction - <b>Applications &amp; Innovations in Robotics &amp; Artificial Intelligence</b> - Matthias Freundel, Fraunhofer IPA
13.55-14.25	<b>Automating cell-based screening with open source, robotics and AI</b> - Ola Spjuth, Uppsala University
14.25-14.55	<b>The tangible execution of our Smart Manufacturing vision</b> - Michelangelo Canzoneri, Merck Group
14.55-15.25	<b>Cutting edge technologies in a process driven environment – How modularity and connectivity drives innovation</b> - Andreas Traube, Fraunhofer IPA
15.25-15.30	Conference Close - Jack Dawson, HighRes Biosolutions

# INFORMATION FOR PARTICIPANTS

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## REGISTRATION

To help keep Robotics & Automation 2022 a safe space, we require the following from all attendees:

1. Pre-registration for the meeting is essential. Please register at [elrig.org](http://elrig.org) and enter our EventFlo registration system (*if you wish to, you may choose a pro-noun, which will be printed on your badge*).
2. To ensure we minimize the risk of spreading COVID, please ensure that you have had at least two vaccinations against the COVID virus and that you are not presenting with any of the symptoms. At registration you may be asked to present your COVID passport, or a document issued by your local government showing you have been double vaccinated. Once you have entered the venue, you may wear a mask if you wish, but this is not compulsory. Please be aware that we expect the meeting to be completely full, so social distancing in the exhibition area and auditorium will not be possible.
3. Please observe our safe space guidelines: At ELRIG we want all our meeting participants, whether the meeting is face-to-face or on-line, to enjoy, participate in and contribute to the event. We are therefore dedicated to providing a harassment-free experience for all event participants involved in its activities and meetings. ELRIG does not accept harassment or intimidation of ELRIG participants in any form whether verbal, physical, or written (including on social media or by email).

Harassment includes, but is not limited to:

1. Offensive or unwanted conduct on the basis of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or sexual orientation which has the purpose or effect of violating dignity or creating an intimidating, hostile or degrading environment.
2. Use of sexualised or other inappropriate images or unwelcome sexualised content, inappropriate physical contact, unwelcome sexual attention or stalking.
3. Sustained interruption of speakers or those asking questions.
4. Unwanted photography or filming.

Intimidation includes, but is not limited to:

1. Making threats.
2. Bullying.
3. Personal attacks.

Participants who do not adhere to these rules will be asked to stop and expected to comply immediately. Participants may be removed from any meeting or communications at the discretion of ELRIG's management if this behaviour continues. If you are being harassed/ intimidated, notice that someone else is being harassed/ intimidated, or have any other concerns, please contact any of the ELRIG management team immediately. They will be able to step in to remove you or others from a chain of

communication, if this is the preferred action, and can also facilitate a discussion or mediation. If you wish, you may also nominate someone else to support facilitating any mediation or as an observer to this process.

Please note that ELRIG photographs and videos may be taken throughout the duration of the meeting, which may then be used for promotional purpose after the event. If you do not wish your image to be used, please let the organisers know. The taking of your own photographs or making your own recordings is strictly forbidden, unless it is needed to help your accessibility to the presentations. The event is cashless and free! All beverages and food served is freely available to all who attend.

## WIFI

Wi-Fi is freely available throughout the venue: Festo Guest Access WLAN - FestoGuestAccess

"FestoGuestAccess" is a WLAN for external guests at Festo and employees' private devices.

The network name for the Internet access for guests and the private devices of the employees is: FestoGuestAccess

## ELRIG MOBILE APP

Download the free ELRIG app and access all our conference information, programme and more from your phone or tablet.

- View the event programme
- View presentation and poster abstracts
- View speaker profiles
- View the exhibitor guide
- View the delegate and exhibitor list
- Organise your day with your own favourites list
- Share your profile as vCard and QR Code and scan exhibitor QR code information tags
- Network – contact delegates, other exhibitors and speakers easily through opt-in directories and integration with Linked-In, Twitter and Facebook

You can download the ELRIG app by visiting the app store appropriate to your tablet or smart phone, scanning the QR code below or visiting the ELRIG website:

[elrig.org/mobile-app](http://elrig.org/mobile-app)





# ABOUT ELRIG

The European Laboratory Research & Innovation Group (ELRIG) is a leading European not-for-profit organization that exists to provide outstanding scientific content to the life science community. The foundation of the organisation is based on the use and application of automation, robotics and instrumentation in life science laboratories, but over time, we have evolved to respond to the needs of biopharma by developing scientific programmes that focus on cutting-edge research areas that have the potential to revolutionize drug discovery. ABOUT ELRIG

Comprising a global community of over 12,000 life science professionals, participating in our events, whether it be at one of our scientific conferences or one of our networking meetings, will enable any of our community to exchange information, within disciplines and across academic and biopharmaceutical organisations, on an open access basis, as all our events are free-of-charge to attend.

## OUR VALUES

Our values are to always ensure the highest quality of content and that content will be made readily accessible to all, and that we will always be an inclusive organisation, serving a diverse scientific network. In addition, ELRIG will always be a volunteer led organisation, run by and for the life sciences community, on a not-for-profit basis.

## OUR PURPOSE

ELRIG is a company whose purpose is to bring the life science and drug discovery communities together to learn, share, connect, innovate and collaborate, on an open access basis. We achieve this through the provision of world class conferences, networking events, webinars and digital content.

## GOVERNANCE

ELRIG's board is comprised of volunteers from it's community, who either work in biopharma, CRO's, academia or with vendor companies. The board is steered by the General Committee, who act as a direct connection to the community and thus is comprised of a diverse group of people. The board delegates it's tasks to a series of work groups, who work with the Operational Team to ensure ELRIG achieves it's objectives. Current work groups are:

- Early Career Professionals
- Marketing Communications
- Networking & Webinars
- People & Culture
- Publications
- Science Strategy
- Vendor Outreach

## STRATEGIC PILLARS



### EVENTS

Deliver UK leading events, showcasing cutting edge science and technology, that are accessible to all.



### EQUALITY, DIVERSITY & INCLUSIVITY

Promote inclusivity, engagement and collaboration, in our diverse community.



### PRESENCE & AWARENESS

Expand and enhance our digital presence.



### SUSTAINABILITY

Drive an open and transparent organisation, with a focus on delivery excellence and financial sustainability.

# ELRIG'S EQUALITY DIVERSITY AND INCLUSION AIMS AND GUIDING PRINCIPLES

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## OUR AIMS

- ELRIG will strive for cultural change, both for itself and the ELRIG community
- Rather than a policy we have developed the ELRIG Community's Guiding Principles
- We will communicate the journey and the conclusions
- The process and implementation of outcomes will be transparent
- Data and the ELRIG community will guide action
- Mechanisms will be put in place to ensure that accessibility is maximised at all events
- Guiding principles will be embedded in governance and all Work Groups daily activities

## OUR GUIDING PRINCIPLES

We will promote equality, by welcoming all to all our events and will be inclusive, by removing barriers to access, and that our events will represent the diversity of the ELRIG community.

### OUR EQUALITY PRINCIPLE IS:

We will ensure that all are welcome by: profiling the demographics of attendees by segment, age, ethnicity, disability and gender, monitoring and ensuring that no one group is favoured nor excluded and act to ensure equal outcomes and opportunities for the entire ELRIG community.

### OUR DIVERSITY PRINCIPLE IS:

We will strive for gender balance at our events, by ensuring that the diversity mix of our speakers represents the diversity of our delegates, and that the diversity mix of our delegates represents the diversity of the ELRIG community, as well as ensuring that scientific content reflects the diversity of the ELRIG community.

### OUR INCLUSIVITY PRINCIPLE IS:

We will ensure that accessibility is maximised at all events, by removing barriers to those with disabilities, limits on finances, caring and parental responsibilities, religious needs, geographical location and other requirements. To ensure our principles remain relevant, we will solicit, monitor, and report to the ELRIG community and act upon relevant feedback during and after events to maintain accessible and safe spaces in which to collaborate.





# ROBOTICS & AUTOMATION 2022 SPONSORS

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# ELRIG EVENTS 2023

## KEY EVENTS

ELRIG is a learned society that organises scientific conferences and forums, for the European drug discovery community. Meetings will have anywhere between 40 to 1500 attendees. Meetings may be an afternoon only to 2 days in length and have a very narrow focus or contain a broad range of topics, applicable to many research areas within the drug discovery community. All events are free-to-attend, simply register at [elrig.org](https://elrig.org).



### 2023 CONFERENCES

#### CRISPR IN DRUG DISCOVERY 2023

The Kings Centre, Oxford  
February 7th - 8th

#### RESEARCH & INNOVATION 2023: ACCELERATING FUTURE DRUG DISCOVERY

Hinxton, Cambridge  
March 29th - 30th

#### THE ELRIG THERAPEUTIC OLIGO AND THE EUROPEAN CHEMICAL BIOLOGY CONFERENCE 2023

AstraZeneca, Gothenburg  
May 9th - 11th

#### DRUG DISCOVERY 2023

ACC Liverpool  
October 18th - 19th

#### HIGH CONTENT IMAGING AND FLOW CYTOMETRY IN DRUG DISCOVERY 2023

GSK, Stevenage  
November 21st - 22nd

### 2023 NETWORKING EVENTS

#### CAMBRIDGE

May 23rd

#### LONDON

June 29th

### 2023 FORUMS

#### LABEL-FREE MASS SPECTROMETRY ASSAYS FOR EARLY DRUG DISCOVERY

The Netherlands  
January 25th

#### SUSTAINABILITY PRACTICES IN DRUG DISCOVERY RESEARCH

Oxford  
April 19th

#### THE SCOTTISH RESEARCH AND DRUG DEVELOPMENT FORUM

Scotland  
April 27th

#### DISCOVERY TECHNOLOGIES 2023: COMPLEX MEDICINES FORUM

Alderley Park  
June 22nd

#### ADVANCEMENTS IN CELL & GENE THERAPY: NEW THERAPEUTIC HORIZONS

Basel  
September 21st

#### FRENCH DRUG DISCOVERY FORUM

France  
December 6th

All events are in-person and free of charge to attend, but registration is essential.