

May 2017

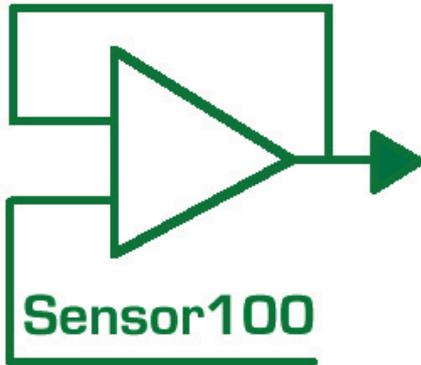
Sensor100

The International Bio-sensor and Chemo-sensor Network



Bronze Medal
eLit Awards 2017

Linking academic, clinical and
commercial worlds



**News and views from the
Sensor100 community**

**Edited by:
Michael Brand PhD SM
FRSC**

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See **Sensor I00** on social media



Sensor I00



Sensor I00 Group



@SensorI00AgTech



@Captum_Capital

From the Editor...

Continuing the theme of April's newsletter, ie looking on the bright side of life, I'm pleased to report that we had no IT problems this month, unlike the NHS and BA. Exactly why the NHS is still reliant on Windows XP hasn't been made clear, but even **Sensor100** has progressed to Windows 10, so perhaps the UK's largest organisation should have done so too. When I was involved in alternative energy a few years back, an Uninterruptible Power Supply, meant no interruption for more than a few milliseconds, or less. The world's (now least) favourite airline obviously failed to invest in that technology.

Miracles do happen! We have finalised the date for Sensors in Medicine 2017 - the 3-5 October at the Holiday Inn, Kensington, London. The three days will cover glucose sensing, PoC and infectious diseases and cancer sensors. Abstracts and requests for exhibition space as soon as possible, please.

Kind regards

Michael Brand
michael@sensor100.com



Pitching for Investment

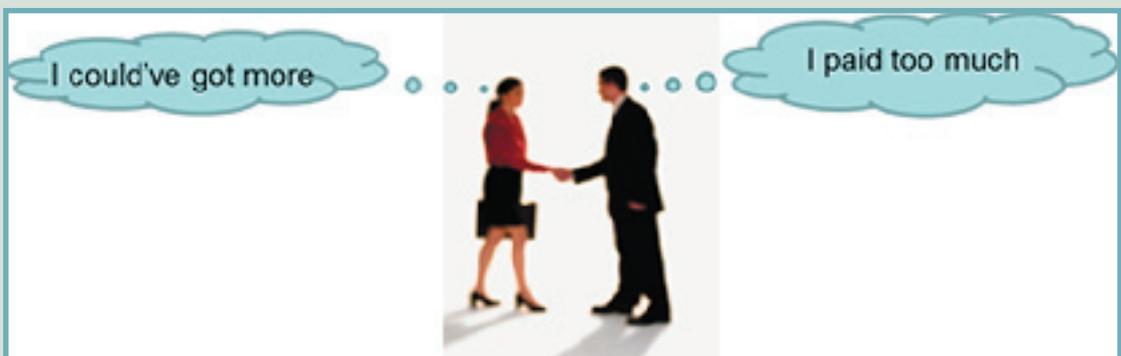
Request for Expressions of Interest

From time to time, **Sensor100** receives enquiries from investors and others looking for opportunities to invest in or acquire early stage sensor technology companies.

There are, of course, many opportunities for early stage companies to give “elevator pitches” to investors, and sometimes these events do include sensor companies.

Sensor100 is interested in finding out how much interest there is from the early stage sensor technology company community in participating in a pitching session limited to sensor companies only. The company might be at any stage from Seed to C round, or later. The format for the event would be a half day or evening, each company would have 10 minutes to pitch, and there would be a modest fee to participate to cover facilities costs.

If you might be interested, with no obligation, please let us know by completing an **Expression of Interest** form.



Royal Society of Chemistry Sir George Stokes Award 2017: Prof. Tony Cass, Imperial College

Awarded for translating research in biomolecular engineering and nanotechnology into new analytical devices and reagents to improve human and animal health



The Sir George Stokes Award, which is made biennially by the RSC Analytical Division Awards Committee, recognises outstanding and sustained contributions to analytical science by someone demonstrably working in a complementary field, which has led to developments of seminal importance to chemical analysis.

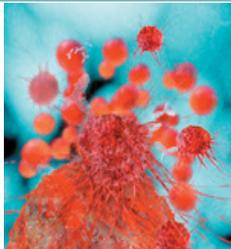
Awarded a BP Junior Research Fellowship at St Hugh's College, Oxford, Tony's research with Prof. Allen Hill and colleagues led to the development of the first electronic blood glucose sensor, an achievement recognised by the award of the Mullard Medal of the Royal Society (jointly with Allen and Dr Monika Green) and a Chemical Landmark Award of the RSC (with Allen and Dr Graham Davis).

Tony then moved to Imperial College London as a lecturer in a newly established Centre for Biotechnology and was subsequently appointed to a chair in Chemical Biology in the Department of Biochemistry before becoming Deputy Director of the Institute of Biomedical Engineering at Imperial College London working closely with its founding director, Professor Chris Toumazou FRS FREng. During this time, he also founded Bio Nano Consulting Ltd. with Professor Gabriel Aeppli FRS. Tony then moved to the Chemistry Department where his research continues in collaboration with colleagues in the faculties of Natural Sciences, Medicine and Engineering.

[RSC Citation](#)

[Prof. Cass' Webpage](#)

[Bio Nano Consulting](#)



Cancer Diagnostic Network

- ✓ Are you developing biosensors for cancer diagnosis?
- ✓ Do you think early diagnosis needs more recognition?
- ✓ Would it help to know who else is working on this?
- ✓ Do we need better early stage diagnostic tools?
- ✓ Can improved diagnosis enhance cancer therapy?

If you identify with any or all of these questions, join the **Cancer Diagnosis Network**, now being formed as one outcome from Sensor100's Workshop "Biosensors for Cancer Diagnosis" held in July 2016.

What will the Network do?

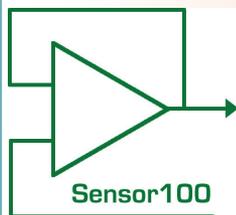
It will evolve as the membership grows, but to start:

- Social media presence - a virtual network
- Quarterly newsletter
- Two or more meetings/conferences a year, with reduced fees for members
- Help raise funds for an Innovation Challenge Platform to identify the most promising early stage diagnostic tools

Annual membership fees apply

[Join Now!](#)

www.sensor100.com/CDN



5th International Conference

Sensors in Medicine 2017

3 - 5
October

London

The 5th Annual **Sensors in Medicine** Conference will take place in South Kensington, London, in early October. The conference has expanded to three days to cover the three most clinically significant applications of biosensors:

- Sensors for glucose monitoring and diabetes care
- Sensors for PoC and infectious disease diagnosis
- Sensors for cancer diagnosis

As in previous years, there will be invited and contributed papers, poster displays, exhibits, panel discussions and a networking reception

Call for Papers

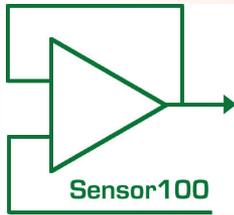
Abstracts in the Conference format marked “Oral” or “Poster” should be submitted by 28 July to info@sensor100.com. Oral presentations should be limited to the conference topics; poster presentations will be accepted on any innovative application of biosensors in medicine and healthcare

Exhibition Space

Contact

info@sensor100.com

Sensors in Medicine 2017



5th International Conference

Sensors in Medicine 2017

3 - 5
October

London

Program

Tuesday 3rd October: Sensors for diabetes care



Keynote: Sensors in diabetes-where are we now and where are we going?

Professor Tony Cass, Imperial College London

Wednesday 4th October: PoC and Infectious Diseases



Keynote: Point-of-Care Testing: the key to new models of care.

Professor Christopher Price, University of Oxford

Thursday 5th October: Sensors for cancer diagnosis

Keynote: Liquid biopsy vs breath analysis
Speaker pending

Venue

Holiday Inn London - Kensington Forum
97 Cromwell Road, London SW7 4DN, UK

Conference Registration will open in mid-June



Sensors in Food and Agriculture

5 - 6 December 2017
Møller Centre Cambridge UK

The 3rd Annual **Sensors in Food and Agriculture Conference 2017** will take place at the Møller Centre, Cambridge UK on 5-6 December. The Conference will explore current applications and future developments in sensor technology for food production. Sensor networks and PoC devices are of growing importance in Agriculture and SFA2017 is the UK's leading conference on this topic. The Conference will be international in scope, reflecting the advances in sensor technology for food production in economies which are more dependent on agriculture.

As at all **Sensor100** conferences there will be a mix of invited and contributed papers, poster displays, exhibits of technology and service providers, panel discussions and a Christmas themed networking reception.

The Møller Centre provides an ideal location for the Conference, situated close to a major agricultural region of the UK, with exceptional facilities for the event and offering accommodation on-site.

Call for Papers

Abstracts in the Conference format marked "Oral" or "Poster" should be submitted by 20th October to info@sensor100.com

Organising Committee

Dr. Michael Brand (Sensor100) | Dr. Andrew Frame (ARM) | Dr. Eric Ober (NIAB)
Dr. Jon West (Rothamsted) | Steve Whalley (Strategic World Ventures)

Exhibition Space

Contact

info@sensor100.com

Register Now!

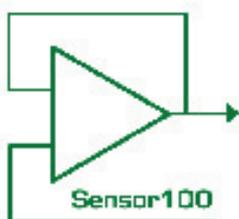
www.sensor100.com/SFA2017

Sensor100 Conference Exhibitors

Exhibition space is available at the Medicine and Food and Agriculture Conferences

Confirmed Exhibitors

B I O D O T



Exhibition Package

- 6ft table or equivalent floor space; 2 chairs
- 1 delegate; additional delegates at 50% registration fee
- Promotion in Conference Book & website
- 1 full page ad in Sensor100's eNewsletter
- 5 minute "elevator pitch" during conference
- Price: £800 + VAT; discounts for exhibiting at 2 or 3 conferences

Alternative sponsorship and exhibitor packages are available; contact **Sensor100** to discuss your requirements
info@sensor100.com



Sensors 2017 - Smart Chemical and Biological Sensing Technologies

16 June 2017 - Burlington House, London

www.aamg-rsc.org

THIRD ANNUAL
BIODEFENSE
WORLD SUMMIT 2017
June 26-29, 2017 | Alexandria, VA

BIODETECTION TECHNOLOGIES
PART 1 PART 2

BIOSURVEILLANCE INTEGRATION
SAMPLE PREP TECHNOLOGIES

Electrochem 2017

10 - 12 September
University of Birmingham

2017 Events Calendar

[Requires pdf reader]

Send details of events to be included in the Calendar to:
info@sensor100.com

Zürich University
of Applied Sciences

zhaw

Life Sciences and
Facility Management

Institute of
Chemistry and Biotechnology

BioTech 2017

Sensor Technology and Online Analytics to Enhance
(Bio)Process Understanding

Programme

7 and 8 September 2017

Zürich University of Applied Sciences (ZHAW)
Wädenswil, Switzerland

semi



MEMS & Sensors
Industry Group*

EUROPEAN MEMS & SENSORS SUMMIT

20-22 SEP 2017
GRENOBLE
FRANCE

BBMEC

12th

Workshop on
Biosensor & Bioanalytical Microtechniques
in Environmental, Food & Clinical Analysis

INTERNATIONAL BIOSENSOR CONFERENCE

25. – 29. September 2017 | Rome, Italy

I3S
2017

5th International Symposium on Sensor Science

27 – 29 September 2017, Barcelona, Spain



sensors





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SENSE-ABLE**

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VOC Gas Sensors

piD-TECH® micro-PID

#1 choice by OEMs for over 15 years

Your instrument.

Our sensors.

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BASELINE

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sensors expo & conference

JUNE 27-29
2017

McENERY CONVENTION CENTER / SAN JOSE / CALIFORNIA

EXHIBIT DATES: JUNE 28-29, 2017

The sensors industry is moving at lightning fast speed.

Experience this change firsthand at the industry's premier event for sensor technical training. The 2017 Sensors Expo & Conference will feature over three days of **Keynotes, Symposia, Case Studies, Technical Sessions, Hands-on Workshops, Networking Parties, and more.**



Conference Tracks & Topics Include:

- EMERGING TECHNOLOGIES
- ENERGY HARVESTING & POWER
- FLEXIBLE & WEARABLES TECH
- IOT & WIRELESS
- MEASUREMENT & DETECTION
- MEMS & SENSORS
- NOVEL SENSOR APPLICATIONS
- OPTICAL SENSING & DETECTION
- SENSOR DATA
- SENSORS & EMBEDDED SYSTEMS DESIGN

"Overall, I found the Sensors Expo event a worthwhile and informative event, effectively structured to enable attendees a variety of experiences, from large keynotes, time to explore the exhibition, technical talks and networking time."

- LEO KENNY, PLANET SINGULAR

REGISTER TODAY
and join 6,000+ of your closest colleagues!

Use **code SENSOR100** when registering for \$100 off a Gold or Main Conference Pass!*



www.sensorsexpo.com

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SENSORS EVENTS:

sensors
medical+
sensors
Design Conference

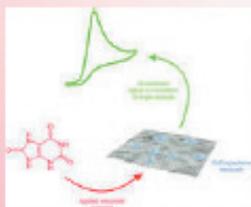
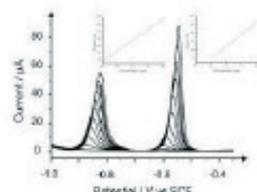
*Discount is off currently published rates. Cannot be combined with other offers or applied to previous registrations.

Electroanalysis Masterclass

3rd - 4th October 2017

Why Electroanalysis?

Electroanalysis are the methods underpinning all electrochemical sensors. This course will provide the attendees with the tools to develop their own electrochemical systems



Targeted

Developed by award winning industrialists and Cambridge academics, this masterclass delivers a rewarding lesson in electrochemical techniques and sensing applications.

Combining both classroom and 'hands on' learning experience, the delegate will leave with the confidence to tackle this expanding technological area.

Structure

Day 1

AM: Fundamental Electrochemistry
PM: Practical Sessions

Day 2

AM: Electroanalysis at work
PM: Developing your toolset

Course Fee

Early bird (prior to 1st July): Two Days £660 (exc.VAT)
One Day £450 (exc.VAT)

Paid In Advance through Zimmer and Peacock

Contact

Dr. Adrian Fisher (acf42@cam.ac.uk)

<https://www.zimmerpeacocktech.com/2017/03/13/cambridge-university-electrochemical-masterclasses/>

How Remote Sensing Powers Precision Agriculture

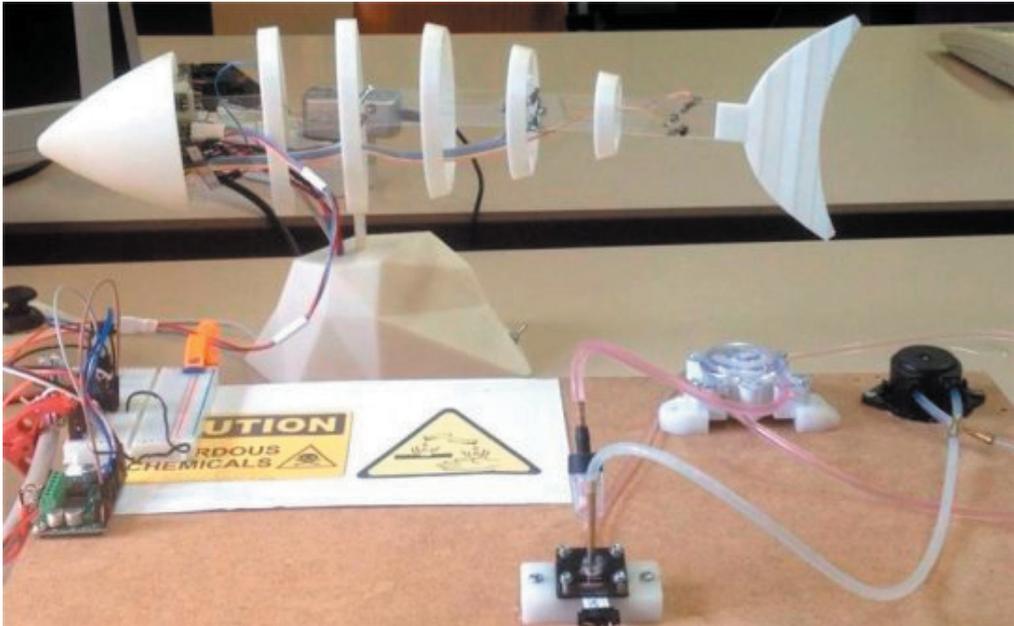


Remote sensing devices take measurements throughout a field over time so that the grower can analyze conditions based on the data and take action that will have a positive influence on the harvest outcome. For instance, sensors can serve as an early warning system allowing a grower to intervene, early on, to counter disease before it has had a chance to spread widely. They can also perform a simple plant count, evaluate plant health, estimate yield, assess crop loss, manage irrigation, detect weeds, identify crop stress and map a field.

Sensors can be grouped according to their enabling technology — ground sensors, aerial sensors and satellite sensors. The only sensor used to be camera film that captured a narrow slice of the electromagnetic spectrum — visible light. Now sensors go far beyond that, measuring short-wavelength gamma radiation at one end and low-frequency radio waves at the other.

Reported by: [AgFunderNews](#), 14 March

New Robotic Fish for Environmental Monitoring



A group of researchers from Centre for Automation and Robotics (CAR CSIC-UPM) in collaboration with researchers from University of Florence are designing autonomous underwater vehicle with biosensors to monitor water quality. These robots, that mimic a swimming fish in order to minimize the fish disturbance and stress, can detect in-situ real-time anomalies and this is suitable to control environmental conditions in fish farms.

Aquaculture has become the fastest growing animal food sector in the world. Today, the production of fish, crustaceans and shellfish supplies around fifty percentages of all fish that is consumed by humans globally. In order to keep aquaculture systems at an optimal level and to avoid physiological stress and disease of fish, water quality and adequate nutrition must be monitored and controlled.

In order to tackle this problem, researchers from Bio-inspired Systems Lab at CAR UPM-CSIC, a joint centre between Universidad Politécnica de Madrid and the Spanish National Research Council, in collaboration with researchers from the Chemical Department of University of Florence (Italy) are developing an autonomous underwater vehicle with biosensor to provide real-time and on-site monitoring of water quality in fish farms.

Reported by: [Science Daily](#) May 10

Amalgam Rx, Gets FDA Approval for Insulin Titration App

AmalgamRx, a newly unstealthed company founded by WellDoc founders Ryan Sysko and Dr. Suzanne Clough, has received FDA clearance for iSage, an insulin titration algorithm. iSage is a prescription-only patient-facing iOS and Android app that works in conjunction with a web portal used by the doctor. The doctor sets target levels for insulin based on the patient's glucose levels. Then the algorithm takes over. Patients can enter their blood glucose levels and iSage will change their insulin dosing levels based on the doctor's plan and the entered values.

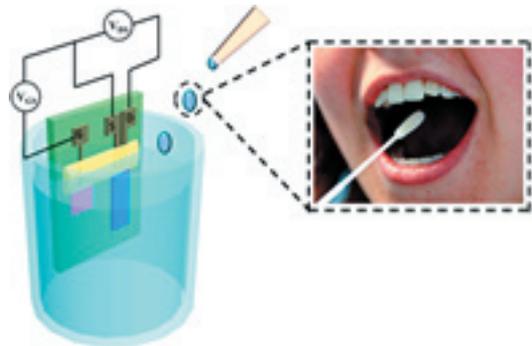


Reported by: [MobileHealthNews](#) May 1

Biological sensor can detect glucose levels in saliva more accurately and cost-efficiently than blood test

Dr Yan Feng and his research team at The Hong Kong Polytechnic University (PolyU) have developed a highly sensitive, accurate, flexible and affordable biological sensor that can detect glucose levels in saliva.

The device is based on an organic electrochemical transistor (OECT), a highly sensitive and easy-to-fabricate platform for biosensors. The OECT platform uses a glucose oxidase enzyme, which is only sensitive to glucose. The team then coated the enzyme with two types of polymer layers to prevent interference from other substances in saliva, thereby increasing both the selectivity and sensitivity of the device. The researchers say the new biosensor is nearly 1,000 times more sensitive than the conventional blood glucose testing method.



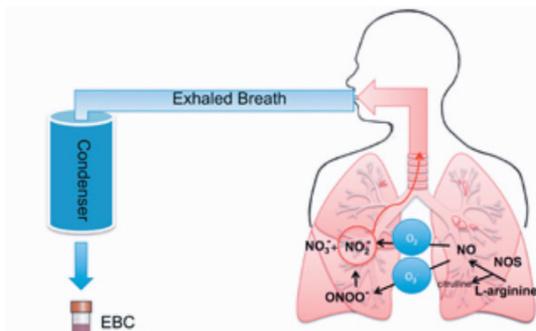
Reported by [Phys Org](#) 2 May

What Has Digital Health Ever Done For US?

At least 60 things, according to a survey by The Medical Futurist

Read the full list [here](#) 2 May

Graphene-Based Sensor Could Improve Evaluation, Diagnosis and Treatment of Asthma



Rutgers University-New Brunswick scientists have created a graphene-based sensor that could lead to earlier detection of looming asthma attacks and improve the management of asthma and other respiratory diseases, preventing hospitalizations and deaths.

[Research News at Rutgers](#) 23 May

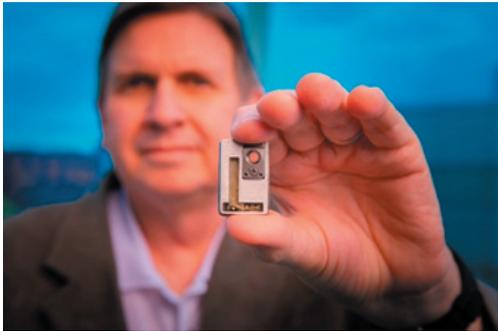
How Diamond Sensors Are Set to Revolutionize Medical Diagnostics

The human body pulses with electric fields that are caused by the movement of charge through nerves and across muscle tissue. But the same processes also produce magnetic fields, and these have the potential to be just as useful in diagnosing disease, perhaps even more so. In particular, magnetic sensors do not need to touch the skin to do their work. The body's magnetic field is tiny, and detecting it requires hugely sensitive sensors. The only commercially available gadgets that can do this job are superconducting quantum interference devices, or SQUIDs, which can measure changes in magnetic fields measured in femtoTesla (10⁻¹⁵). These need to be cooled to the temperature of liquid helium, and the measurements made in screened rooms that are shielded from external magnetic fields. Matthew Dale and Gavin Morley at the University of Warwick in the U.K. say that diamond sensors are poised to revolutionize the way physicians use magnetic field measurements in diagnostic medicine. They map out the state of the art in this area and say that the business opportunity is significant.

Reported by [MIT Technology Review](#) 15 May

Using the body's own cells as biosensors is the goal of Buffalo start-up

Efferent Labs' device allows real-time data to be collected from inside a patient



Bill Rader, founder of Efferent Labs, holds the prototype device that may make it possible to monitor cell-level changes in patients receiving chemotherapy to determine optimum dosages.

The company has developed an implantable device that scans cells, such as hepatocytes (liver cells) and fibroblasts (cells that make connec-

tive tissue) with florescent light to detect changes. The information is immediately sent wirelessly for analysis, and can be viewed on a tablet computer. That immediacy saves time, and the implanted sensor makes it possible to collect more data from a patient. Rader hopes to use cells from the patient being tested to elevate the level of individualized detection and treatment. The goal is to eventually use the device to monitor cell-level changes in patients receiving chemotherapy to determine optimum dosages.



Reported by: [University at Buffalo News Centre](#) 24 May

Biomarker challenge

Four months to build a biological sensor system with up to £1000 support
Learn | Prototype | Share

Application deadline 23 June 2017
see: www.synbio.cam.ac.uk/biomarkerchallenge

Join our mixer events: 6 May | 2-3 June | 6 June | 14 June

Supported by: OpenPlant SynBio SRI CambridgeSens

Biomarker Challenge Open

Biomarker Challenge is a four-month programme challenging interdisciplinary teams to build low-cost sensors and instruments for biology. From colorimeters to microfluidics and beyond, the search is on for frugal, open source and DIY approaches to biological experiments.

Open to University of Cambridge, John Innes Centre and the Earlham Institute. Apply by 23 June.

[Cambridge Network](#) | 1 May

Antibody Biosensor Tracks Drug Concentration in the Blood by Changing Its Color

Being able to monitor drug concentration in the blood of a patient is an important aspect of any pharmaceutical treatment. However, this requires equipment and facilities that are often missing from field healthcare in developing countries, but also inhibits the quality of life for patients elsewhere. EPFL scientists, working through their startup LUCENTIX, have now developed an antibody-linked biosensor that can track drug concentration in the blood by changing its color. The biosensor is incorporated into a full system that can be used in the field or by patients at home. The lab of Kai Johnsson at EPFL is known for developing biosensors, and the research gave birth to the startup LUCENTIX, which has developed a biosensor that allows patients to easily measure drug concentrations in their system without need for complex lab systems.

The biosensor is a molecule made up of three components: First, a protein that can bind the drug to be monitored. Second, the light-producing enzyme luciferase. And third, a “tagging” molecule called SNAP-tag, which carries a fluorescent ligand that the protein (the first component) recognizes and binds when no drug is present. This causes a reaction between the luciferase and the fluorescent molecule called “bioluminescent resonance energy transfer” (BRET), which produces a red light.



EPFL News | 17 May

Reuters Lists op 10 Most Innovative Universities in Europe

KU Leuven, Belgium
Imperial College London, United Kingdom
University of Cambridge, United Kingdom
Technical University of Munich, Germany
École Polytechnique Fédérale de Lausanne, Switzerland
University of Erlangen-Nuremberg, Germany
Pierre and Marie Curie University, France
Delft University of Technology, Netherlands
University of Zurich, Switzerland
University of Oxford, United Kingdom

Reported by: [European Institute of Innovation and Technology](#), 11 May

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