University of Sussex Life Sciences

Research Directory Life Sciences





The Research Directory of the School of Life Sciences This Research Directory provides a single snapshot of all research activities across the School's five subject groups: Biochemistry and Molecular Biology; Chemistry; Evolution, Behaviour and Environment; Genome Damage and Stability; and Neuroscience. Listed alphabetically, each researcher provides a thumbnail sketch of their particular research interests and a link to their laboratory's web site where much more information can be found. The school was founded in 1965 by John Maynard Smith, one of the twentieth century's most influential evolutionary biologists. He advocated that barriers to interaction between researchers in the various disciplines of science should be removed. And today this interdisciplinary ethos remains central to our strategic plan for advancing basic and translational research in the interest of the environment, sustainable development and human health.

Professor Laurence Pearl FRS Head of the School of Life Sciences

120 - 45= 165-> 180

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Biochemistry and Molecular Biology

Chemistry

Genome Damage and Stability

Neuroscience

Claudio Alonso www.sussex.ac.uk/lifesci/alonsolab

The Alonso lab investigates the molecular mechanisms controlling gene function during neural development with a focus on RNA control.

John Armstrong

www.sussex.ac.uk/lifesci/armstronglab We study how fission yeast transforms from a single cell

to complex pseudo-hyphae, as a model for differentiation and fungal infection.

John Atack

www.sussex.ac.uk/lifesci/drugdiscovery I am interested in developing new drugs for treating

cancer and other disorders.

Jonathan Bacon

www.sussex.ac.uk/lifesci/baconlab

escape behaviour. Pheromone signalling coordinating ant foraging.

Mark Bagley

www.sussex.ac.uk/lifesci/bagleylab

Heterocyclic chemistry, the synthesis of heterocyclic compounds of biological interest and the properties of heterocyclic drugs and natural products.

Jon Baxter

www.sussex.ac.uk/lifesci/baxterlab

Work in the Baxter lab focuses on how duplicated chromosomes are resolved, during both DNA replication and mitosis.

Paul Benjamin

www.sussex.ac.uk/lifesci/benjaminlab We aim to understand the adaptive role of temporary lapses of recall in memory consolidation.

Alessandro Bianchi

www.sussex.ac.uk/lifesci/bianchilab

We study how the natural ends of the chromosomes, the telomeres, ensure the protection and integrity of the genome.

Wendy Brown

www.sussex.ac.uk/lifesci/brownlab Our research looks at the chemistry in space which

leads to the formation of stars, planets and even the Universe itself.

Keith Caldecott

www.sussex.ac.uk/lifesci/caldecottlab

We are focused on understanding how broken DNA is repaired, and the consequences to human health if this repair is attenuated or absent. Tony Carr www.sussex.ac.uk/lifesci/carrlab

The Carr lab studies how the mistakes made while duplicating our DNA can lead to changes in our genetic code that in turn can cause cancer.

Evolution. Behaviour and Environment

Qiao Chen

www.sussex.ac.uk/lifesci/chenlab

We focus on developing metal oxide materials for application in Green energy, chemical sensors and biotechnology.

Tom Collett

www.sussex.ac.uk/lifesci/insectnavigation Insect navigation reveals how smart behaviour involving learning and vision may be accomplished using modest neural resources.

Juan-Pablo Couso

www.sussex.ac.uk/lifesci/cousolab

We uncover and characterise micro-genes hidden inside normal genes and junk DNA. Nobody knows what they do, and there are thousands of them.

Hazel Cox

www.sussex.ac.uk/lifesci/coxlab

We use quantum theory to determine the properties of metal complexes and to explore fundamental interactions in three-particle systems.

Geoff Cloke FRS www.sussex.ac.uk/lifesci/clokelab

My group focuses on using organometallic chemistry to transform carbon monoxide or carbon dioxide into valuable compounds or fuels.

Neil Crickmore

www.sussex.ac.uk/lifesci/btlab

We are working to characterise, and exploit, a species of bacterium that can produce toxins capable of killing insect pests and human cancer cells.

Ian Crossley

www.sussex.ac.uk/lifesci/crossleylab

Development of molecules with unusual electronic properties for use both in molecular electronic devices and in molecular activation/catalysis.

lain Day

www.sussex.ac.uk/lifesci/daylab

Investigating the structure and dynamics of small molecules and their aggregates in solution with nuclear magnetic resonance spectroscopy.

Key

Biochemistry and Molecular Biology

Genome Damage and Stability

Neuroscience

Chemistry

Aidan Doherty www.sussex.ac.uk/lifesci/dohertylab

The Doherty group is investigating novel cellular mechanisms involved in the replication and repair of damaged DNA.

Jessica Downs

www.sussex.ac.uk/lifesci/downslab

The Downs lab is interested in understanding the dynamic interplay between chromatin and genome stability.

Sherif El-Khamisy

www.sussex.ac.uk/lifesci/el-khamisylab

Breaking and sealing one strand of DNA: the consequence of the imbalance.

Adam Eyre-Walker

www.sussex.ac.uk/lifesci/eyre-walkerlab I am interested in studying the rates, patterns and fitness effects of new mutations using bioinformatics methods.

Jeremy Field

www.sussex.ac.uk/lifesci/fieldlab

The evolution of social systems in the wild, especially the fundamental question of how and why sociality evolves in wasps and bees.

Tim Flowers

www.sussex.ac.uk/profiles/902

As salinity is a major problem for agriculture we study how some plants live on salt marshes when crops are killed by salt.

David Goulson

www.sussex.ac.uk/lifesci/goulsonlab

Ecology, behaviour and conservation of bumblebees; conserving biodiversity and pollination services in farmland; impacts of pesticides on wildlife.

Paul Graham

www.sussex.ac.uk/lifesci/insectnavigation

I am interested in the efficient computational mechanisms that enable insects to navigate despite their small brains.

Majid Hafezparast

www.sussex.ac.uk/lifesci/hafezparastlab

My lab investigates the underlying molecular mechanisms of adult-onset Motor Neuron Disease.

Elizabeth Hill

www.sussex.ac.uk/lifesci/hilllab I investigate how complex mixtures of chemical contaminants in the environment affect human and wildlife health.

Helfrid Hochegger www.sussex.ac.uk/lifesci/hocheggerlab

We use genetic approaches, advanced microscopy and proteomics to study how mitotic kinases and phosphatases orchestrate cell division.

Evolution. Behaviour and Environment

Eva Hoffmann

www.sussex.ac.uk/lifesci/hoffmannlab We study structural changes to chromosomes and how they promote rearrangements of genes.

William Hughes

www.sussex.ac.uk/lifesci/hugheslab Sex, symbionts and societies: the evolutionary biology and behavioural ecology of sociality, symbiosis, animal behaviour and sex.

Penny Jeggo

www.sussex.ac.uk/lifesci/jeggolab We study the response to breaks in both DNA strands and their impact on human health.

George Kemenes

www.sussex.ac.uk/lifesci/kemeneslab Analysis of evolutionarily conserved cellular and molecular mechanisms of memory function and dysfunction in defined neural circuits.

Ildiko Kemenes

www.sussex.ac.uk/profiles/26997

I am interested in the behavioural and physiological processes underlying memory formation and especially what happens during lapses in memory.

Sergei Korneev

www.sussex.ac.uk/lifesci/korneevlab

We investigate the role of long noncoding RNAs in nitric oxide-dependent physiological and pathophysiological processes in the brain.

Corne Kros

www.sussex.ac.uk/lifesci/kroslab

Function and development of auditory hair cells: preventing drug-induced deafness and the role of spontaneous activity in the development of the auditory system.

Leon Lagnado

www.sussex.ac.uk/lifesci/lagnadolab

How do synapses in the visual system transfer and transform the information in a stimulus?

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Biochemistry and Molecular Biology

Genome Damage and Stability

Neuroscience

Chemistrv

Michael Land FRS www.sussex.ac.uk/lifesci/landlab

Evolution of optical systems and visual behaviour in animals. Human eye movements and the representation of space.

Alan Lehmann FRS

www.sussex.ac.uk/lifesci/lehmannlab

I am interested in how cells repair DNA damaged by UV, and in genetic disorders that result from defects in repairing this DNA damage.

Mark Maconochie

www.sussex.ac.uk/lifesci/maconochielab Understanding the regulation and function of growth factor signalling in the inner ear to enable development of therapies to cure deafness.

Tony Moore

www.sussex.ac.uk/lifesci/moorelab

The structure, function and inhibition of cyanideinsensitive respiration via the alternative oxidase in plants, fungi and human pathogens.

Simon Morley

www.sussex.ac.uk/lifesci/morleylab

How do cells know how much and what kinds of protein to make and why do cancer cells often get it so wrong?

Ted Morrow

www.sussex.ac.uk/lifesci/morrowlab

The two sexes share a single genome but use it for different things. Our research asks: do the resulting compromises cause disease?

Johanne Murray

www.sussex.ac.uk/lifesci/murraylab

We are interested in how cells correctly replicate their DNA, with a specific interest in the regulation of homologous recombination.

Oscar Navarro

www.sussex.ac.uk/lifesci/navarrolab

Design and synthesis of organometallic complexes and their application as catalysts in new methodology for organic synthesis and polymerisations.

Matt Neale

www.sussex.ac.uk/lifesci/nealelab

Matt Neale's lab investigates the mechanisms underpinning DNA repair and genetic variation using the model organism *Saccharomyces cerevisiae*.

Jeremy Niven www.sussex.ac.uk/lifesci/nivenlab

I'm interested in how neural circuits in animal brains have evolved in relation to behaviour that they generate and the energy they consume.

Evolution. Behaviour and Environment

Mark O'Driscoll

www.sussex.ac.uk/lifesci/odriscolllab

We study the underlying causes and effects of impaired DNA repair using patient material from various known and new human genetic diseases.

Tony Oliver

www.sussex.ac.uk/lifesci/oliverlab We use structural biology to study the assembly and regulation of multi-component systems involved in DNA damage repair.

Mark Osborne

www.sussex.ac.uk/lifesci/osbornelab

We focus on developing laser spectroscopic and single molecule detection techniques for bio-imaging and nano-material characterisation.

Michael O'Shea

www.sussex.ac.uk/lifesci/oshealab

What can simple neuronal networks tell us about how the human brain acquires, processes, stores and uses information?

Daniel Osorio

www.sussex.ac.uk/lifesci/osoriolab Animal vision: colour, communication and camouflage.

Mark Paget

Laurence Pearl FRS

exploitation for drug discovery.

Mika Peck

Chris Prodromou

www.sussex.ac.uk/lifesci/pagetlab

www.sussex.ac.uk/lifesci/pearllab

www.sussex.ac.uk/lifesci/pecklab

impact of global change on ecosystems.

www.sussex.ac.uk/lifesci/prodromoulab

Conservation ecology and sustainable livelihoods -

from conserving endangered species to addressing the

We look at understanding the molecular details by which

Hsp90 brings about the maturation of client proteins.

DNA damage and stress responses, and their

Understanding and exploiting stress responses in bacteria for the production of antibiotics and biofuels.

Structural studies of multiprotein complexes regulating

Key

Biochemistry and Molecular Biology

Genome Damage and Stability

Neuroscience

Chemistry

Francis Ratnieks www.sussex.ac.uk/lasi

I carry out research on honey bees, stingless bees, ants, other social insects: their social behaviour and

Guy Richardson FRS

social evolution.

www.sussex.ac.uk/lifesci/richardsonlab

Molecular and cellular basis of hearing with an emphasis on the mechanisms of hereditary and drug-induced deafness.

Jörn Scharlemann

www.sussex.ac.uk/lifesci/scharlemannlab

I study the impact of environmental change on biodiversity to identify strategies for sustainable life on Earth.

Louise Serpell www.sussex.ac.uk/lifesci/serpelllab

We study the outcomes of protein misfolding - leading to toxicity and deposition in disease, or to the formation of very strong, fibrous proteins.

Alison Sinclair

www.sussex.ac.uk/lifesci/sinclairlab

We study how viruses infect cells and create replication factories.

John Spencer

www.sussex.ac.uk/lifesci/spencerlab

We study organic synthetic methodology towards bioactive molecules, microwave-mediated chemistry and palladacycle design, study and reactivity.

Kevin Staras

www.sussex.ac.uk/lifesci/staraslab

We look at synapses - signalling points between brain cells - investigating how they normally work and also change during learning or disease.

Alan Stewart

www.sussex.ac.uk/lifesci/stewartlab

We aim to understand the processes that control insect population and communities, in order to conserve biodiversity and control insect pests.

Steve Sweet

www.sussex.ac.uk/lifesci/sweetlab

The Sweet lab studies the alteration and potential re-establishment of epigenetic modifications after the repair of DNA double-strand breaks.

Hideo Tsubouchi www.sussex.ac.uk/lifesci/tsubouchilab

We are interested in understanding the mechanism and regulation of homologous recombination of DNA using budding yeast as a model organism.

Evolution. Behaviour and Environment

John Turner

www.sussex.ac.uk/lifesci/turnerlab Fundamental and applied studies of catalytic small molecule activation for operative catalysts to close the carbon cycle, powered by sunlight.

Eddy Viseux

www.sussex.ac.uk/lifesci/viseuxlab We use novel chiral complexes based on gold, hafnium and manganese to enantioselectively catalyse reactions and access new chemotherapeutics.

Simon Ward

www.sussex.ac.uk/lifesci/drugdiscovery I am interested in developing new drugs for treating cancer and other disorders.

Felicity Watts

www.sussex.ac.uk/lifesci/wattslab

We are interested in the function of the DNA integrity protein Crb2 and the role of the post-translational modifer, SUMO, in DNA damage responses.

Michelle West

www.sussex.ac.uk/lifesci/westlab Our research is focused on deciphering the mechanisms involved in B-cell transformation by the cancerassociated herpes virus, Epstein-Barr.



In 1965 John Maynard Smith created the first School of Life Sciences in which the exciting new areas of molecular biology, development, neuroscience and evolutionary ecology were integrated. Almost every university in the UK has now emulated the Sussex interdisciplinary pattern that he pioneered.

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"Nothing in biology makes sense except in the light of evolution"

Theodosius Dobzhansky



