SHOWCASE 2012

Winners
The University of Leeds Postgraduate Research Conference
SHOWCASE 2012

Research Image
SHOWCASE 2012

Research Image

2nd Place
Alexander Wright

Using image patches to understand the bigger picture in cancer

At the University of Leeds, we use digitised images of cancer tissue, called virtual slides, to diagnose cancer patient biopsies. Automatic analysis of virtual slides is highly desirable for reducing time taken, subjectivity and human error. Analysis requires these large virtual slides to be divided into smaller image patches. These are scored using visual characteristics, and a ratio of these scores produced. This ratio is a useful marker for patients’ prognoses or likelihood of responding to chemoradiotherapy.

Using over 100,000 colon cancer patches, this mosaic image shows a pathologist using a 44 megapixel display, called the Virtual Pathology Powerwall.

www.virtualpathology.leeds.ac.uk
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Research Image

1st Place
Sebastian Eves-van den Akker
School of Biology
Visualising a genome
The potato cyst nematode, *Globodera pallida*, causes £50million in damages annually in the UK. We have recently sequenced its genome. For this Image I have visualised the whole genome. Each gene is made of A’s G’s C’s and T’s. Each gene has been turned into a set of directions, where A, G, C, T correspond to “up”, “down”, “left” and “right”. We can then draw each gene where shape and colour correspond to sequence and length respectively. These have been arranged to form the shape of the major cities and contours of the UK and Ireland as seen from space. Acknowledgements: Thanks to the Urwin Lab, the James Hutton Institute and everyone involved in sequencing the Genome.
SHOWCASE 2012

Research Poster
3rd Place
Is breakfast the most important meal of the day?

Understanding the effects of breakfast on cognitive performance, behaviour and learning in school children

Katie Adolphus, Louise Dye, Clare Lawton
Human Appetite Research Unit
Institute of Psychological Sciences

Why bother with breakfast?
A third of adolescents never eat breakfast. Breakfast skipping is highest in adolescents and where breakfast is eaten, the nutrition quality is often poor.

Benefits of breakfast
- Provides fuel for the brain. Young brains use 200%-300% more glucose than an adult brain
- Breaks overnight fast, - longer in adolescents
- Associated with maintaining a normal Body Mass Index
- Makes large contribution to daily nutrient intake
- Positive effects on cognitive performance
- Increases ability to stay on-task in the classroom
- Positive effects on school grades, attendance and punctuality

The Aims
To investigate the effects of breakfast on:
1. Cognitive performance
2. Subjective mood state
3. School achievement
4. On task behaviour in class

The Measures
Objective and validated cognitive tests
Ecologically valid school performance indicators and school grades
Film classroom behaviour
Ask them! Rate feelings using Visual Analogue Scale

The Methods
Study 1 Habitual breakfast, school performance, cognitive failures
7-day food diary, questionnaire and cognitive failures questionnaire
311 adolescents aged 16-18 years

Study 2 Habitual breakfast, Cognitive Abilities Test performance
Questionnaire, Cognitive Abilities Test scores and bodyweight
420 young adolescents aged 11-13 years

Study 3 Acute effects of breakfast on in-class behaviour
Film classroom activity, breakfast compared with no breakfast
26 young adolescents aged 11-13 years

Study 4 Acute of breakfast on cognitive performance and mood
Cognitive testing, breakfast compared with no breakfast
232 young adolescents 11-13 years

The Impact
Currently, no funding for breakfast in schools, only for free school meal at lunch. Breakfast provision reliant on school funds, charities or external businesses. 80% of core lessons are before lunch. Should some investment be directed at providing breakfast?

The Partnership
All studies are carried out secondary academy schools.
Research benefits: Access to large sample in the "real world"
School based benefits: Raise educational aspirations and impact

Our partnership work
- Dissemination evening
- Breakfast club donations
- Higher education and careers talks
- Student mentoring
- Colour vision screening
- Research Open Days
- Healthy eating assemblies
- Podcast
- Student voice focus groups
- Science education
- Community event
- Text book donations
SHOWCASE 2012

Research Poster

2nd Place
Are Abnormal Joint Shapes A Possible Cause of Hip Disease?

Femoroacetabular Impingement (FAI)

- Bony abnormalities (lumps)
- Rigorous Hip Motion

Types (Figure 1):
- Cam – bony abnormality on the femoral head
- Pincer – bony abnormality on the acetabular cup
- Mixed – combination of both cam and pincer

Symptoms: catching (impingement), groin pain, limited motion, grinding & popping sensation

Damage: cartilage and labral tearing & separation

Treatment: file off bony abnormality

Clinical Need

- Osteoarthritis (OA), a form of arthritis, is the leading cause of hip replacements (responsible for 93%)\(^1\)
- FAI maybe a key initiator of OA

Current treatment:
- Surgery alters the shape of the joint
- Techniques are supported by clinical outcome, NOT scientific knowledge

Labral Tissue (Figure 2):
- Labrum is a tissue attached to the circumference of the socket and to the edge of the cartilage
- Currently, there is only basic mechanical & biological knowledge of the tissue

Project Aim:

To develop a physical model of FAI, using a natural mismatched cup and socket, of two hips.

The model will be used to provide scientific understanding to assess and support surgical treatments.

Project Objectives:

- Characterise the cartilage and labral tissues, found inside the hip joint
- Identify damage thresholds of the tissues
- Use the natural hip simulation of FAI to assess the effects of varying loads, on both tissues

References

3) http://commons.wikimedia.org/wiki/File:FAI_theora.ogg
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Research Poster
1st Place
**The Smell of Modernism**

**Problem**
The Question
Is there anything identifiable ‘Modernist’ about the treatment of smell within art, literature and other cultural products between 1900-1930?

**Research Materials**
- Texts by Henry Bergson, D. H. Lawrence, James Joyce, Marcel Proust and Aldous Huxley valorise odour. These writers directly address the problem of odour’s lack of descriptive terms, supporting my thesis of a specifically Modernist concept of smell.
- Chemical methods for neutralising the smell of bodily wastes, such as bleaches, created crises of representation as they become an embedded aspect of modern culture.
- Perfumes efface individual human odour, replacing it with a manufactured scent. The development of aldehydes, by-products of coal tar, enabled the creation of semi-synthetic perfumes such as Chanel No.5.

**Research Findings**
- Smell highlights language’s limitations as a visually based system of signification. Odour’s evanescence resonates with Modernism’s projection of flux and instability as central to human existence.
- Despite the dominance of visuality, odour suggests itself as that which is evocative of reality. Modernism promotes the illusory nature of vision; odour offers a more immersive experience.

**Impact**
- Textual links between tuberculosis and odour, and the physiology of smelling support the work of the Leeds Centre for Medical Humanities, with an interdisciplinary workshop planned for spring 2013.
- Links between hygiene, odour and the Modernist urban landscape inform research into the present-day relationship between smells and cities. My research into the language of smell enables a questioning of the discursive practices underlying contemporary smell criticism.

**Critical Context**
Smell is a neglected area of Modernist criticism. Current smell criticism focuses upon smell as a socio-historical phenomenon, rather than questioning odour’s interrelationship with language.

**Historical Context**
Plato, Aristotle, Kant and Hegel dismiss smell as the least important of the senses, favouring vision with a central role in the pursuit of knowledge.

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*http://smellandthecity.wordpress.com/*
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Three Minute Thesis
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TMT
3rd
Jessica Read

SHOWCASE Celebrating Excellence in Postgraduate Research
TMT 2nd
Mazen Al-Hajjar
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Researcher of the Year
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Researcher of the Year
3rd
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Gordon Clubb
Joint 3rd
SHOWCASE 2012

Gordon Hutchins
Joint 3rd
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Researcher of the Year

2nd
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Natalie Hirst

2nd
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Researcher of the Year

1st
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Matthew Fuller

1st