



## Selected scientific abstracts presented at the 2nd annual congress of the European Society for Translational Medicine & Global Network Conference on Translational Medicine (EUSTM-2014). Vienna, Austria, 22-25 September, 2014<sup>☆</sup>

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### Oral Presentations

#### Translational research at NASA: From earth to space and back again

Thomas J. Goodwin

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#### Abstract

The Space Environment provides many challenges to the human physiology and therefore to extended habitation and exploration. Translational research and medical strategies are meeting these challenges by combining Earth based medical solutions with innovative and developmental engineering approaches. Translational methodologies are currently applied to spaceflight related dysregulations in the areas of: (1) cardiovascular fluid shifts, intracranial hypertension and neuro-ocular impairment 2) immune insufficiency and suppression/viral re-expression, 3) bone loss and fragility (osteopenia/osteoporosis) and muscle wasting, and finally 4) radiation sensitivity and advanced ageing. Over 40 years of research into these areas have met with limited success due to lack of tools and basic understanding of central issues that cause physiologic maladaptation and disrupt homeostasis. We will discuss the effects of living in space (reduced gravity, bone and muscle loss, increased radiation and varying atmospheric conditions [EVA]) during long-duration, exploration-class missions and how translational research has benefited not only space exploration but also Earth based medicine. Modern tools such as telemedicine advances in genomics, proteomics, and metabolomics (Omics-sciences) has helped address syndromes, at the systemic level by enlisting a global approach to assessing spaceflight physiology and to develop countermeasures thereby permitting our experience in space to be translated to the Earth's medical community.

<http://dx.doi.org/10.1016/j.nhtm.2014.11.002>

<sup>☆</sup>Abstracts included in the manuscript are selected by the editors. The manuscript does not contain all the conference abstracts.

#### Translational imaging - What, why and how?

Luc Bidaut

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#### Abstract

Through its varied instances, technologies and applications, biomedical imaging readily lends itself to translational approaches from in-vitro all the way to clinical. Whereas the disciplines, technologies, scales and scopes vary throughout the translational pipeline, they tend to coalesce when reaching the in-vivo context (e.g., through animal models), which ideally then leads to direct evaluation, validation and application in the human. This presentation will focus on demonstrating such a potential through a few in-vivo examples using imaging in a translational context, for providing and exploiting new biomarkers as well as to affect clinical workup, from diagnosis to therapy planning and follow-up. Suggested implementation strategy for suitably supporting such a multidisciplinary effort in the scope of cancer as an example will also be presented. The intent is not to wholly answer the questions in the title, but rather to open up the audience to what imaging - in a broad and modality-neutral sense - can not only bring to the fields of biomarkers and novel diagnostics, but also how it can help in bridging the usual gaps between fundamental research (e.g., biology, instrumentation, devices and in-vitro testing) and clinical applications.

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#### Advanced light microscopy: More than accessory technologies for pathophysiological research

Josef Gotzmann

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#### Abstract

Light Microscopy is one of the most valuable and versatile tools in biomedical research. Imaging "infiltrated" all kinds of natural science categories, serving cell and developmental biologists, pathobiologists, physicists, material scientists, chemicals, pharmaceutical specialists and clinicians, thereby acting as THE "translational" method. In recent years we observed fast and revolutionary development of new biooptical