

# Biocell Energetics – a new service to profile, in real-time, how cells produce energy

*University of Birmingham Enterprise announces the launch of a profiling and testing services that assesses, in real-time, how living cells produce energy*

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*Dr Jonathan Barlow,  
University of Birmingham, UK.*

[University of Birmingham Enterprise](#) announces the launch of [Biocell Energetics](#), to provide profiling and testing services that assess, in real-time, how living cells produce energy.

The venture is founded by Dr [Jonathan Barlow](#), Scientific Research Director at Birmingham’s Cellular Health and Metabolism Facility at the College of Life and Environmental Sciences, who is a leading expert in cellular bioenergetics, the branch of biochemistry that focuses on how cells generate, store or transform energy.

Biocell Energetics will provide services including real-time metabolic profiling of cells from healthy and disease populations or models, metabolic phenotyping and quality control testing for cryopreserved and isolated cells, real-time mitochondrial toxicity screening, and professional consultancy, including study design, data analysis and interpretation, so companies and researchers can get the most out of their study.

Dr Barlow has high-level expertise in advanced techniques that reveal when cells switch between energy-producing pathways and has published widely on best practice in this area, as well as the effect of exercise on metabolic processes, and factors that can affect energy metabolism in mitochondria – the small, membrane bound structures inside of cells, which are responsible for generating most of the energy needed by cells.

Dr Barlow said: “The bioenergetics approach is relevant to studying many cell types, and disease states including the metabolic changes in diabetes and obesity. The service has contributed to recently published studies in heart disease, immunology and cancer, cardiology, and immunology, in addition to basic research.”

He is also planning a workstream in elite sports, which will help athletes optimise their

performance by exploring how their cells generate and use energy, and unlocking insights into how they respond to training and injury. He expects this work to result in an R&D platform to identify novel biomarkers for predictors of inflammation, immunosuppression and metabolic health and fitness.

While Dr Barlow's work initially attracted attention in drug discovery and therapeutics companies, there is growing interest from researchers working for tissue banks and companies producing cell culture media for cultivated meats.

What bioenergetics measurements reveal – and where are they used?

There are two processes by which cells make energy. While one takes place inside mitochondria, the other takes place in the cytosol (the liquid portion of the cell). The balance between these two pathways varies by cell type, and cells can switch from one to another.

The type of analysis done by Dr Barlow benchmarks this balance and shows, in real-time, when and how this balance changes.

This is especially relevant for the pharmaceutical industry, which needs to test the safety and efficacy of new drug candidates on cell models mitochondria before they are evaluated in clinical trials.

The interest in cellular metabolism is also high in the cultivated meat industry. Currently, most cultivated meats are grown in media based on animal protein, but the demand for completely meat-free products means that producers are looking for alternatives to grow cells in.

Measuring energy metabolism of cells grown in meat-free media will enable players in this competitive industry to select the best medium, that will support the highest growth rate for their cultivars.

There is also demand from the environmental testing sector, which examines effects of pollutants such as shampoos, soaps, or waterproofing materials that are toxic to aquatic life, and may enter the food chain.

About Biocell Energetics

Biocell Energetics is as an Operating Division of University of Birmingham Enterprise. It will operate from the School of Sport, Exercise and Rehabilitation Sciences, which is ranked one of the top-rated sport science departments in the UK, and is one of the longest established in Europe for scientific research into sport, exercise, health and rehabilitation.

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