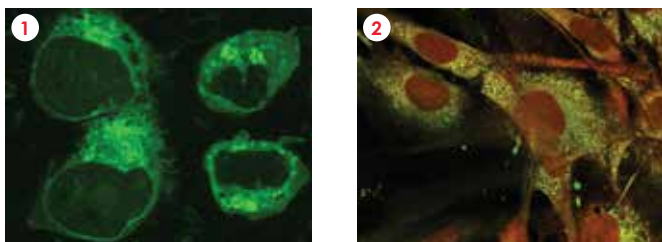


Fluorescent retinoid derivatives

Durham University and High Force Research Limited have developed a range of stable retinoid derivatives with intrinsic fluorescence. These molecules can function as both a biologically active retinoid and at the same time act as a visual probe. Imaging applications for the use of these novel compounds in cell biology range from visualisation and localisation to monitoring real-time concentration and local environments.

Technology:

Retinoids are an important class of signalling molecules that are involved in controlling many aspects of stem cell proliferation, differentiation and apoptosis. However, laboratory handling of natural retinoids is difficult due to their tendency for photoisomerisation and degradation. Building on previous work to develop stable analogues, the team at Durham has now developed a new range of fluorescent compounds with biological activity and applications for imaging in the field of cell development and tissue culture.



TERA2.cl.SP12 (pic1) and keratinocyte cells (pic2) treated with 10 uM (micromolar) fluorescent retinoid (green) for 7 days, and 2 days

These probes can be used to monitor cell behaviours in 2D and 3D cell culture experiments, in embryos that develop outside a maternal host, in organ cultured tissues and in bioengineered artificial tissue mimics. Preliminary results on keratinocytes (skin cells), neuroblastoma (cancer cells) and human embryonal carcinoma cells have shown the ease of observation of the fluorescence. These compounds also show strong solvatochromic fluorescence behavior, where their emission wavelength depends on the polarity of the local environment.

APPLICATIONS

- Investigations in cell biology, including:
 - developmental biology
 - stem cell proliferation and differentiation
 - apoptosis
- Imaging of retinoid localisation
- Investigation of local environment
- Active in cell culture, developing embryos, cultured tissues and bioengineered tissues

BENEFITS

- Stable to photoisomerisation and oxidation
- Molecules are intrinsically fluorescent, without bulky tags
- Retain biological activity of natural retinoids, and can enter cells and use retinoid shuttling systems
- Range of analogues with different bioactivities
- Fluorescence varies with polarity, for investigation of local environmental conditions
- Can also act as Raman probes, which allows concentration levels to be measured
- Manufacturing route and scale up complete

Patents:

The compounds are protected by a patent. Further information is available under confidentiality.

Status:

A series of different compounds have been developed with different biological activities and different solubilities, for use in a range of situations. Process development and synthetic scale up has been completed by High Force Research Limited.

Samples of materials are available for all compounds for application development and future reagent sales. The University and High Force Research Limited are looking for a partner who would like to collaborate, license or distribute the compounds.

LICENSING & PARTNERING OPPORTUNITY

For further information on this technology, please contact:

Stella James

E: stellajames@highforceresearch.com

T: +44 (0)191 377 9098