University of Birmingham

Dr Elena Odintsova PhD

Lecturer

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About

Elena Odintsova is a lecturer in School of Cancer Sciences.

Elena's research interests are in the field of Cancer Cell Biology. She has published a number of research papers in high-ranking scientific journals. Dr Odintsova has expertise in various imaging techniques. Her research has been funded by grants from Breast Cancer Campaign and from the University of Birmingham. She is involved in undergraduate teaching and in postgraduate students supervision.

Elena actively participates in fund-raising and promotional events held by Cancer Research UK and by Breast Cancer Campaign.

Qualifications

- PhD Microbiology, 1991
- BSc/MSc Microbiology, 1984

Biography

Elena Odintsova graduated from Moscow State University in 1984. She joined the laboratory of Dr GA Dubinina in the same year as a PhD student. Elena continued her research career as a research scientist in the laboratory led by Professor V Gorlenko from 1988. She gained her PhD degree in January 1991. As a microbiologist Elena Odintsova worked successfully in a few leading laboratories in UK and USA and published 7 papers in international journals.

From 1997 Elena became interested in Cell Biology. She worked as a postdoctoral researcher in the laboratory of Dr F Berditchevski studying tetraspanin proteins and their role in breast cancer. Her specific interests were in investigating interactions of tetraspanins and growth factor receptors of ErbB family. Elena is skilled in various imaging techniques and their applications in cancer cell biology.

Dr E.Odintsova became a lecturer in 2008. She acquired independent funding from the University of Birmingham and Breast Cancer Campaign. She continues laboratory research and supervises undergraduate and postgraduate students' research projects.

Elena is also responsible for training for and looking after Zeiss LSM510 system in the CRUK Institute of Cancer Sciences.

Teaching

- Deputy Module leader, MBChB 2 Year, Cancer:Causes and Cures
- BMedSci Clinical Sciences Intercalated Course
- PSIBS Postgraduate Course
- Personal Mentor for MBChB students, group PM84

Postgraduate supervision

- Supervising PhD students

Research

Research Theme: Cancer Cell Biology

Dr.Odintsova's research interests are based around following directions:

1) The role of the transmembrane proteins of the tetraspanin superfamily in the organisation of microdomains/lipid rafts at the plasma membrane. Tetraspanins are structural and functional organisers of the specific microdomains – tetraspanin-enriched microdomains (TERM). Function of the receptors associated with TERM depends heavily on membrane lipid organisation which can be regulated by different tetraspanins. Specifically, previous work indicated importance of gangliosides in the assembly and stability of tetraspanin-enriched microdomains. Furthermore, tetraspanin CD82 has been shown to regulate signalling of EGFR by affecting gangliosides' expression level.

2) Regulation of signalling through the transmembrane receptors of ErbB family in mammary epithelial cells in relation to cell migration and invasion. E.Odintsova devoted a number of years to studying interactions of tetraspanins and ErbB receptors, specifically of tetraspanin CD82 and EGFR. CD82 is a metastasis suppressor, and EGFR is involved in progression of many cancers. CD82 was found in a complex with EGFR. Moreover, it modulates activity of the receptor via alterations in its internalisation rate and plasma membrane distribution. CD82 is also associated with other ErbB receptors. Its ability to modulate activity of the receptors is currently investigated in relation to use it as a marker for efficient use of certain drugs (see below).

3) The role of metastasis suppressor CD82/KAI1 in regulation of cellular responses to the extracellular stimuli in breast cancer. The effect of CD82 on the cellular

responses of breast cancer cells to the Herceptin is currently investigated. It was shown that CD82 attenuates proliferation of Herceptin-responding cells. Two possible mechanisms are being studied: involvement of CD82 in the regulation of membrane dynamics of ErbB2 (cellular target for Herceptin treatment) and modulation of ErbB2 downstream signalling by tetraspanin.

4) The role of tetraspanins in membrane dynamics and endocytosis. There is growing evidence that tetraspanins have a role in trafficking, sorting in endosomes and exocytosis of the molecules associated with TERM. Furthermore, it was found that tetraspanins regulate cellular entry and release of various enveloped viruses. Tetraspanins use various endocytic routes and affect trafficking of transmembrane receptors associated with TERM. Since endocytic trafficking controls functions of transmembrane proteins further investigations will gain insight into regulatory role of tetraspanins in this process.

Other activities

- Member of MBChB Year 1 and 2 Curriculum Committee
- Member of School of Cancer Sciences Teaching and Learning Committee
- Organiser of lab tours for CRUK fundraisers and sponsors

Publications

S. Petersen, G. Taylor, T. Haigh, E. Odintsova, A. B. Rickinson, F. Berditchevski. (2011) The role of tetraspanin CD63 in antigen presentation to CD4+ T cells. Eur J Immunol

Alexi X., Berditchevski F., and Odintsova E. (2011) The effect of cell-ECM adhesion on signalling via ErbB family of growth factor receptors. Biochem Soc Trans, v.39, part 2:568-73

Berditchevski F., Odintsova E. (2007) Tetraspanins as regulators of protein trafficking. Traffic, 8:1-8.

Odintsova E., Voortman J., Gilbert E., Berditchevski F. (2003)Tetraspanin CD82 regulates compartmentalization and ligand-induced dimerization of EGFR. J Cell Sci. Nov 15;116(Pt 22):4557-66.

Odintsova E., Butters T.D., Monti E., Sprong H., van Meer G., Berditchevski F. (2006) Gangliosides play an important role in the organisation of CD82-enriched microdomains. Biochem J. 400:315-325.

Bass R, Werner F, Odintsova E, Sugiura T, Berditchevski F, Ellis V. (2005) Regulation of urokinase receptor proteolytic function by the tetraspanin CD82. J Biol Chem. 280: 14811-14818.

Berditchevski F, Odintsova E, Sawada S, Gilbert E. (2002) Expression of the palmitoylation-deficient CD151 weakens the association of alpha 3 beta 1 integrin with the tetraspanin-enriched microdomains and affects integrin-dependent signaling. J Biol Chem, 277(40):36991-7000

Odintsova E., Sugiura T., Berditchevski F. (2000) Attenuation of EGF receptor signaling by a metastasis suppressor tetraspanin KAI-1/CD82. Current Biology, v.10:1009-1012

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