

Professor John Heath

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Postgraduate supervision

For a list of possible PhD projects offered by Prof Heath

www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Heath (<http://www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Heath>)

Research

Research Theme within School of Biosciences: [Molecular and Cell Biology \(/research/activity/cellbiology/index.aspx\)](/research/activity/cellbiology/index.aspx)

Short research description: Organisation and behaviour of chromosomes in plant meiosis

Structure and function of growth factors and their receptors

We are interested how the specificity and dynamics of growth factor signalling is controlled in human cells. This is a central problem in understanding a wide variety of human disease states such as cancer, inflammation, tissue repair and infertility.

Our research relies heavily on advanced techniques for studying and manipulating the formation and dynamic distribution of protein complexes including mass spectroscopy/proteomics, optical imaging, computational modelling and structural biology.

Funding for the research comes from Cancer Research UK and the [EC Endotrack programme](http://www.endotrack.org/). (<http://www.endotrack.org/>)

Publications

Cunningham DL, Creese AJ, Auciello G, Sweet SM, Tatar T, Rappoport JZ, Grant MM, Heath JK. Novel binding partners and differentially regulated phosphorylation sites clarify Eps8 as a multi-functional adaptor. *PLoS One*. 2013 Apr 23;8(4):e61513. doi: 10.1371/journal.pone.0061513. Print 2013. PubMed PMID: 23626693; PubMed Central PMCID: PMC3634024.

Creese AJ, Shimwell NJ, Larkins KP, Heath JK, Cooper HJ. Probing the complementarity of FAIMS and strong cation exchange chromatography in shotgun proteomics. *J Am Soc Mass Spectrom*. 2013 Mar;24(3):431-43. doi: 10.1007/s13361-012-0544-2. Epub 2013 Feb 12. PubMed PMID: 23400772; PubMed Central PMCID: PMC3586169.

Auciello G, Cunningham DL, Tatar T, Heath JK, Rappoport JZ. Regulation of fibroblast growth factor receptor signalling and trafficking by Src and Eps8. *J Cell Sci*. 2013 Jan 15;126(Pt 2):613-24. doi: 10.1242/jcs.116228. Epub 2012 Nov 30. PubMed PMID: 23203811; PubMed Central PMCID: PMC3613183.

Ryan KR, Lock FE, Heath JK, Hotchin NA. Plakoglobin-dependent regulation of keratinocyte apoptosis by Rnd3. *J Cell Sci*. 2012 Jul 1;125(Pt 13):3202-9. doi: 10.1242/jcs.101931. Epub 2012 Mar 27. PubMed PMID: 22454524.

Wheldon LM, Khodabukus N, Patey SJ, Smith TG, Heath JK, Hajihosseini MK. Identification and characterization of an inhibitory fibroblast growth factor receptor 2 (FGFR2) molecule, up-regulated in an Apert Syndrome mouse model. *Biochem J*. 2011 May 15;436(1):71-81. doi: 10.1042/BJ20100884. PubMed PMID: 21355848.

Guerrero ML, Heath JK. Computational modeling of biological pathways by executable biology. *Methods Enzymol*. 2011;487:217-51. doi: 10.1016/B978-0-12-381270-4.00008-1. PubMed PMID: 21187227.

Mardakheh FK, Auciello G, Dafforn TR, Rappoport JZ, Heath JK. Nbr1 is a novel inhibitor of ligand-mediated receptor tyrosine kinase degradation. *Mol Cell Biol*. 2010 Dec;30(24):5672-85. doi: 10.1128/MCB.00878-10. Epub 2010 Oct 11. PubMed PMID: 20937771; PubMed Central PMCID: PMC3004269.

Guerrero ML, Heath JK (2010) Computational modelling of biological pathways by executable biology. *Methods in Enzymology* 487, 219-253

Mardakheh FK, Auciello G, Dafforn TR, Rappoport JZ, Heath JK. (2010) Nbr1 is a novel inhibitor of ligand-mediated RTK degradation. *Mol Cell Biol*.30, 5672-5685 PubMed PMID: 20937771.

Wheldon LM, Haines BP, Rajappa R, Mason I, Rigby PW, Heath JK (2010) Critical Role of FLRT1 Phosphorylation in the Interdependent Regulation of FLRT1 Function and FGF Receptor Signalling. *PLoS ONE* 5(4): e10264. doi:10.1371/journal.pone.0010264

Dudka AA, Sweet SM, Heath JK. (2010) Signal transducers and activators of transcription-3 binding to the Fibroblast Growth Factor Receptor is activated by receptor amplification. *Cancer Res*. 2010 Apr 15;70(8):3391-401. PubMed PMID: 20388777.

Cunningham DL, Sweet SM, Cooper HJ, Heath JK. (2010) Differential Phosphoproteomics of Fibroblast Growth Factor Signaling: Identification of Src Family Kinase-Mediated Phosphorylation Events. *J Proteome Res*. Apr 7. PMID: 20225815.

Heath, J. K. (2009). The Equivalence between Biology and Computation. Lecture Notes in Bioinformatics, vol. 5688. pp 18-25. DOI= http://dx.doi.org/10.1007/978-3-642-03845-7_2 (http://dx.doi.org/10.1007/978-3-642-03845-7_2)

Mardakheh FK, Yekezare M, Machesky LM, Heath JK. (2009) Spred2 interaction with the late endosomal protein NBR1 down-regulates fibroblast growth factor receptor signaling. *J Cell Biol.* 2009 Oct 19;187(2):265-77. Epub 2009 Oct 12. PubMed PMID:19822672; PubMed Central PMCID: PMC2768835.

Sweet SM, Jones AW, Cunningham DL, Heath JK, Creese AJ, Cooper HJ. (2009) Database Search Strategies for Proteomic Data Sets Generated by Electron Capture Dissociation Mass Spectrometry. *J Proteome Res.* 2009 Oct 27. [Epub ahead of print] PubMed PMID: 19821632.

Kwiatkowska MZ, Heath JK. Biological pathways as communicating computer systems. *J Cell Sci.* 2009 Aug 15;122(Pt 16):2793-800. PubMed PMID: 19657015.

Mohamet L, Heath JK, Kimber S. Determining the LIF-sensitive period for implantation using a LIFR antagonist. *Reproduction.* 2009 Jul 27. [Epub ahead of print] PubMed PMID: 19635738.

Guerrero ML, Dudka A, Underhill-Day N, Heath JK, Priami C. Narrative-based computational modelling of the Gp130/JAK/STAT signalling pathway. *BMC Syst Biol.* 2009 Apr 15;3:40. PubMed PMID: 19368721; PubMed Central PMCID: PMC2678071.

Bailey CM, Sweet SM, Cunningham DL, Zeller M, Heath JK, Cooper HJ. SLoMo: Automated Site Localization of Modifications from ETD/ECD Mass Spectra. *J Proteome Res.* 2009 Apr;8(4):1965-71. PubMed PMID: 19275241.

Sweet SM, Bailey CM, Cunningham DL, Heath JK, Cooper HJ. Large scale localization of protein phosphorylation by use of electron capture dissociation mass spectrometry. *Mol Cell Proteomics.* 2009 May;8(5):904-12. Epub 2009 Jan 8. PubMed PMID: 19131326; PubMed Central PMCID: PMC2689766.

Fouladi-Nashta AA, Mohamet L, Heath JK, Kimber SJ. Interleukin 1 signaling is regulated by leukemia inhibitory factor (LIF) and is aberrant in *Lif*^{-/-} mouse uterus. *Biol Reprod.* 2008 Jul;79(1):142-53. Epub 2008 Mar 12. PubMed PMID: 18337516.

Akbarzadeh S, Wheldon LM, Sweet SM, Talma S, Mardakheh FK, Heath JK. The deleted in brachydactyly B domain of ROR2 is required for receptor activation by recruitment of Src. *PLoS One.* 2008 Mar 26;3(3):e1873. PubMed PMID: 18365018; PubMed Central PMCID: PMC2268744.

Sweet SM, Mardakheh FK, Ryan KJ, Langton AJ, Heath JK, Cooper HJ. Targeted online liquid chromatography electron capture dissociation mass spectrometry for the localization of sites of *in vivo* phosphorylation in human *Sprouty2*. *Anal Chem.* 2008 Sep 1;80(17):66507. Epub 2008 Aug 7. PubMed PMID: 18683950.

Gaffney EA, Heath JK, Kwiatkowska MZ. A mass action model of a Fibroblast Growth Factor signaling pathway and its simplification. *Bull Math Biol.* 2008 Nov;70(8):2229-63. Epub 2008 Oct 9. PubMed PMID: 18841420.

