

## Frederik De Smet

Switch laboratory  
Department of Molecular and Cellular Medicine,  
VIB-KU Leuven

BSc Bioengineering, KU Leuven, 2000  
MSc Bioengineering, KU Leuven, 2003  
PhD Biomedical Science, KU Leuven, 2010

### Current Position

Postdoctoral scientist at Switch laboratory  
VIB-KU Leuven

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### Current Project Members

Phd Student: Mirian Saiz Rubio (MSc)  
PhD Student: Evelyne Naus (Msc)  
Master thesis student: Bert Houben (Bsc)

### Keywords

Protein aggregation – p53 tumor suppressor – clinical studies – cellular biophysics – proteostatic cancer therapeutics

### Science

A growing number of diseases are associated with inappropriate depositions of protein aggregates, typically including neurological disorders and systemic amyloidoses. During malignancy, proteins are usually uncontrollably over-expressed or structurally changed due to genetic mutations, assuming that the complex/aggregation level or status of these proteins in cancer cells will change accordingly. It remains, however, largely unexplored whether aggregation of tumor suppressor/oncogenes could contribute to the induction or progression of malignancy. I am therefore setting up a platform to investigate, in a larger scale, the role of protein aggregation, the involvement of the protein quality control machinery and their effect on malignancy. This is done in cell culture systems, animal models for cancer development and tumor biopsies from the clinic.

### Current Fellowships

Postdoctoral research fellow Fund for Scientific Research (FWO), Flanders  
01/10/2013-30/09/2016  
project: 'p53 aggregation in cancer: prevalence and cellular mechanism'  
role: postdoc

### Previous Fellowships

Switch laboratory  
Postdoctoral Fellowship of the Department Cellular and Molecular medicine, KU Leuven  
Period: 01.01.2011 – 30.09.2013  
Title: 'Protein aggregation: a novel driver for tumorigenesis?'  
Role: postdoc

Switch laboratory  
Flanders Institute for Biotechnology (VIB) - Postdoctoral Fellowship  
Period: 01.07.2010 – 31.12.2010  
Title: 'Protein aggregation: a novel driver for tumorigenesis?'

Role: postdoc

Vesalius Research Center, VIB-KULeuven

Period: 01.01.2008 – 30.06.2010

Title: Allosteric modulation of a tyrosine kinase receptor by an extracellularly acting small-molecule chemical compound: inhibition of (lymph)angiogenesis in fish, frogs and mice by a multi-FGFR inhibitor'

Role: PhD student

Vesalius Research Center, VIB-KULeuven

Fellowship from the 'Agentschap voor innovatie door wetenschap en technologie' (IWT)

Period: 01.01.2004 – 31.12.2007

Title: Allosteric modulation of a tyrosine kinase receptor by an extracellularly acting small-molecule chemical compound: inhibition of (lymph)angiogenesis in fish, frogs and mice by a multi-FGFR inhibitor'

Role: PhD student

### Selected Publications

Bono F\*, **De Smet F\***, Herbert C, De Bock K, Georgiadou M, Fons P, Tjwa M, Alcouffe C, Ny A, Bianciotto M, Jonckx B, Murakami M, Lanahan A, Michielsen C, Sibrac D, Dol-Gleizes F, Mazzone M, Zacchigna S, Herault JP, Fischer C, Rigon P, Ruiz de Almodovar C, Claes F, Blanc I, Poesen K, Zhang J, Segura I, Gueguen G, Bordes MF, Lambrechts D, Broussy R, van de Wouwer M, Michaux C, Shimada T, Jean I, Blacher S, Noel A, Motte P, Rom E, Rakic JM, Katsuma S, Schaeffer P, Yayon A, Van Schepdael A, Schwalbe H, Gervasio FL, Carmeliet G, Rozenski J, Dewerchin M, Simons M, Christopoulos A, Herbert JM\*, Carmeliet P \*. Inhibition of tumor angiogenesis and growth by a small-molecule multi-FGF receptor blocker with allosteric properties. *Cancer Cell*, 2013. (IF 26.5) \* equally contributed/shared first author

Herbert C\*, Schieberr U\*, Saxena K\*, Juraszek J\*, **De Smet F\***, Alcouffe C, Bianciotto M, Saladino G, Sibrac D, Kudlinzki D, Sreeramulu S, Brown A, Rigon P, Herault JP, Lassalle G, Blundell T.L., Rousseau F, Gils A, Schymkowitz J, Tompa P, Herbert JM, Carmeliet P\*, Gervasio FL\*, Schwalbe H\*, Bono F\*. Molecular mechanism of SSR128129E, an extracellularly acting small molecule allosteric inhibitor of FGF receptor signaling. *Cancer Cell*, 2013. (IF 26.5) \* equally contributed/shared first author

Beerten J, Jonckheere W, Rudyak S, Xu J, Wilkinson H, **De Smet F**, Schymkowitz J, Rousseau F. Aggregation gatekeepers modulate protein homeostasis of aggregating sequences and affect bacterial fitness. *Protein Eng Des Sel*. 2012 25(7):357-66. (IF 2.9)

Xu J, Reumers J, Couceiro J, **De Smet F**, Gallardo R, Rudyak S, Cornelis A, Rozenski J, Zwolinska A, Marine J, Lambrechts D, Suh Y, Rousseau F, and Schymkowitz J. Aggregation of p53 as a mechanism of tumour suppressor inactivation and oncogenic gain-of-function. *Nature Chemical Biology*. 2011, 7(5):285-95. (IF 14.7)

[All publications](#)