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PhD in Medical Sciences  
2016-2017

INVITATION to the Public defence of

**Johnny DUERINCK**

To obtain the academic degree of '**DOCTOR IN MEDICAL SCIENCES**'

**Targeting VEGF(R) in the treatment of recurrent glioblastoma**

**Wednesday 6 September 2017**

Auditorium **Vanden Driessche**, 18:00

Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:

<http://www.vub.ac.be/english/infoabout/campuses>

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## Summary of the dissertation

Standard treatment for glioblastoma at first diagnosis consists of surgery, followed by radiation therapy and chemotherapy. Despite a significant impact on survival, the tumor will almost inevitably recur. At recurrence, no treatment has demonstrated to prolong overall survival in a randomized clinical trial. Glioblastoma growth is characterized by increased formation of new blood vessels (neo-angiogenesis), a process in which the VEGF(R) receptors and growth factors play an important role. This thesis is built on the results from several clinical trials for patients with recurrent glioblastoma conducted at UZ Brussel. In these trials, the potential of new treatment options targeting the VEGF(R) axis is explored. Sunitinib, a first-in-class small molecule tyrosine kinase inhibitor (TKI) that inhibits VEGF-R, PDGF-R and c-KIT, was investigated as a single agent or in combination with lomustine but failed to show sufficient activity to be developed further. In contrast, experience with bevacizumab in the context of a Belgian Medical Need program in recurrent glioblastoma (including 313 patients), demonstrated that this VEGF-blocking monoclonal antibody has anti-tumor activity with acceptable toxicity and improves progression-free survival, unfortunately without an indication for improved overall survival. Axitinib, a second generation, more specific small molecule VEGF(R) inhibitor, alone or in combination with lomustine, was found to have anti-tumor activity in range with that of bevacizumab. Despite the fact that VEGF(R)-targeted therapy has not become part of standard treatment options for patients with recurrent glioblastoma in the EU, the unique features of these therapeutic agents revealed in our clinical trials have paved the way for combinatorial regimens with immunotherapy that are currently under investigation.

## Curriculum Vitae

Johnny Duerinck was born in Sint-Niklaas, Belgium on 22nd November 1982. After completing secondary school at the Koninklijk Atheneum Dendermonde in 2000, he started as a medical student at the Vrije Universiteit Brussel.

His interest in neurology, fascination for new technologies and premeditation to becoming a surgeon came together when he discovered the specialty of neurosurgery. He started his training to become a neurosurgeon under Jean D'haens at Uz Brussel in 2007. From his first week as an assistant in neurosurgery onward, he has been seeing patients in the neuro-oncology clinic, led by Prof Bart Neyns. This allowed him to not only get an insight in longitudinal follow-up of patients with brain tumors, but also to get in contact with clinical research. Johnny has presented work at several national and international meetings and has published the results of the clinical trials in several peer-reviewed journals. He finished his training as a neurosurgeon in 2013 and has continued working in the neurosurgery and neuro-oncology departments of Uz Brussel, always combining clinical neurosurgery and neuro-oncology work with the design and conduct of clinical trials.