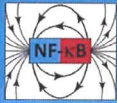


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# 6th European NF-kappaB Workshop

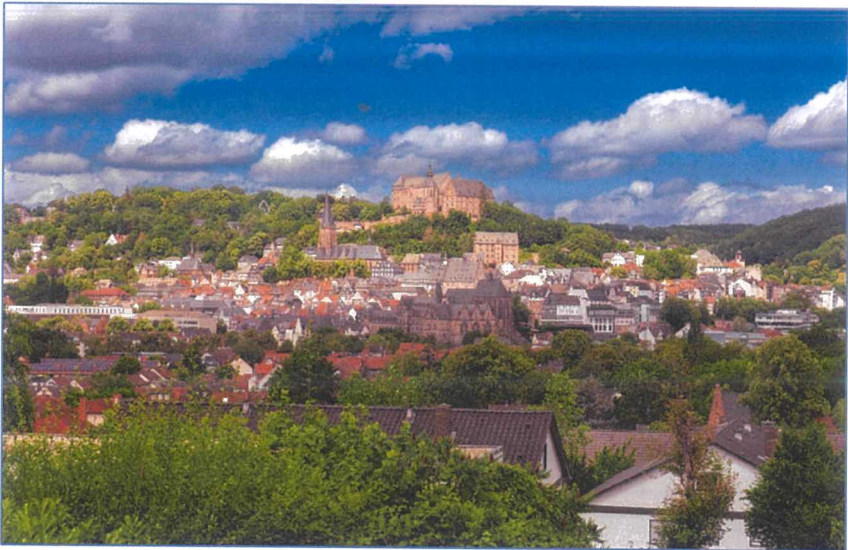
Monday 02 September 2024 - Wednesday 04 September 2024

Vila Vita Rosenpark, Marburg



6th European  
NF-kappaB Workshop

## Book of Abstracts



## Venue



Vila Vita Rosenpark  
Hotel & Residenz Rosenpark  
GmbH  
Anneliese Pohl Allee 7-17  
35037 Marburg, Germany  
+49 (0) 6421 6005-0  
info@vilavita.com  
All sessions will take place in the  
„Vivaldi“ room (basement floor of  
hotel)

## Organisers



Michael Kracht  
Rudolf Buchheim Institute of Pharmacology  
Biomedical Research Center Seltersberg  
Schubertstrasse 81  
35392 Giessen  
+49 (0)641 99-47600  
michael.kracht@pharma.med.uni-giessen.de



Lienhard Schmitz  
Institute for Biochemistry  
Friedrichstrasse 24  
35392 Giessen  
+49 (0)641-99-47570  
lienhard.schmitz@biochemie.med.uni-giessen.de

## Contact / Support

Orgalution GmbH  
+49 (0)251 92870230  
nfbk@orgalution.de

Heike Schubert/Office Rudolf Buchheim Institute  
+49 (0)641-99-47601

Ines Höfliger/Office Institute for Biochemistry  
+49 (0)641-99-47571

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## Talk 9 - Vivien Ya-Fan Wang

### The regulation of transcriptional activation by NF- $\kappa$ B p52 homodimer and proto-oncogenic Bcl3

Author: Vivien Ya-Fan Wang<sup>1</sup>

<sup>1</sup> *University of Macau*

The binding of transcription factors (TFs) to their specific DNA response elements in the promoters/enhancers of target genes is the key event regulating gene transcription and consequent cellular events. The NF- $\kappa$ B family of TFs plays a critical role in diverse physiological processes. Our study focuses on the transcriptional regulation by one NF- $\kappa$ B family member, p52, and its specific co-factor, B-cell lymphoma 3 (Bcl3). Bcl3 is an oncoprotein, the constitutive nuclear presence of Bcl3 induces chronic inflammation and proliferation. Bcl3 is also extensively phosphorylated, it associates with NF- $\kappa$ B p52 homodimers to regulate transcription. Using the combination of structural and biochemical studies, we have shown 1) Bcl3 plays an essential role in enhancing p52:p52 homodimer population in cells which is an unique mechanism to p52 within NF- $\kappa$ B family. 2) Crystal structures of p52:p52 homodimer in complex with its natural  $\kappa$ B DNA target site(s) revealed a widening of the DNA minor groove compared to all previously known structures of NF- $\kappa$ B-DNA complexes; further MD simulations studies provide new insights into allosteric control by closely related  $\kappa$ B DNAs on NF- $\kappa$ B-dependent transcriptional specificity. 3) Phospho-modification mediated changes in Bcl3 regulate DNA accommodation by the Bcl3:(p52:p52) complex. Overall, our studies shed lights on the intricate structural changes driven by both DNA and protein conformation and dynamic states in modulating transcriptional activity.