



Einladung zum Vortrag im Rahmen der
erweiterten Fakultätskolloquien von

Mark Manuel Somoza, B.Sc. MSc PhD

Institut für Anorganische Chemie
der Fakultät für Chemie, Universität Wien

**„Exploring the specificity landscape of nucleic acid
binding molecules with novel microarrays”**

High complexity DNA microarrays are widely used in genetics research for high-throughput studies of gene expression and regulation. We have invented the necessary synthesis chemistry for constructing similar arrays of RNA molecules. RNA microarrays have completely different applications that reflect the far more diverse and complex roles played by RNA in cellular biology. These roles include sensing environmental and signaling molecules and controlling gene expression in response to signaling, and catalyzing biological reactions. RNA-binding proteins (RBP), for example, play major roles in the post-transcriptional regulation of gene expression by controlling the splicing, localization, translation and degradation of messenger RNA (mRNA). Evaluating the binding specificity landscape of RBPs is necessary to understand gene regulatory networks and to engineer molecules that can be used therapeutically to modify gene expression. Because the RNA-binding proteome is large, ~1000 proteins, and the binding sites and patterns largely unknown, we are developing microarrays containing >~750000 distinct RNA sequences to be used as high-throughput tools to explore the binding patterns of RBPs. Using another novel synthetic approach, enzymatic conversion of DNA to RNA, we are also developing microarrays of long RNA oligonucleotides to be used to study riboswitches. Riboswitches are RNA structures common in bacterial mRNA that bind small molecules, such as metabolites and second messengers, and allow mRNA to self-regulate in response to changing environmental conditions. Arrays of riboswitches will be used to understand their molecular recognition specificity and their role in regulating essential processes in bacteria - such as cell cycle control, pathogenesis, quorum sensing and biofilm formation - as well as to understand how to engineer metabolic pathways in microorganisms for a synthetic biological approach to natural product synthesis.

Montag, 27. Juni 2016, 16:30 Uhr
Carl Auer von Welsbach Hörsaal
Boltzmannngasse 1, 1090 Wien

Bernhard Keppler
Institut für Anorganische Chemie

Bernhard Keppler
Dekan

Lothar Brecker
Vizedekan

Veronika Somoza
Vizedekanin