

Curriculum Vitae – Prof. Dr. Harald Schwalbe 26.03.1966

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Education

1993-1995 Postdoctoral fellow at the Oxford Centre for Molecular Sciences, Oxford University (Mentor: C.M. Dobson, FRS)
1990-1993 Chemistry, University of Frankfurt, Germany, Ph.D. (summa cum laude; Mentor: C. Griesinger)
1985-1990 Chemistry, University of Frankfurt, Germany, Diploma (summa cum laude; Mentor: C. Griesinger)

Professional Career

2014- EU representative of Goethe University Frankfurt
2013-2017 Member of the Board of Directors: Cluster of Excellence: Macromolecular Complexes
2012- Coordinator: DFG-funded Network of German NMR Centres
2012- Chairman of the Frankfurt section of the Society of German Chemists (GDCh)
2011- Speaker: DFG-SFB 902: "Molecular principles of RNA-based regulation"
2011-2016 Chairman of the DFG panel: large equipment ("Apparatausschuß")
2009-2012 Speaker: DFG-Cluster of Excellence EXC115: "Macromolecular Complexes"
2009-2010 Member of the DFG panel: large equipment ("Apparatausschuß")
2007-2009 Speaker: DFG-SFB 579: "RNA-Ligand-Interactions"
2006-2008 Deputy Director: DFG-Center of Excellence: Macromolecular Complexes
2005- Member of Senate of Goethe-University Frankfurt
2003- Coordinator of 5 EU-funded programmes (STREPs, TOKs, Research Infrastructure for NMR (I3))
2002-2006 Managing Director of the Center for Biomolecular Magnetic Resonance, BMRZ
2003-2008 Head of the Department (Dekan) "Biochemistry, Chemistry and Pharmacy"
2002- Full Professor (C4), Institute for Organic Chemistry and Chemical Biology, University of Frankfurt
2001 Associate Professor for Biological Chemistry, Massachusetts Institute of Technology
1999-2001 Assistant Professor for Biological Chemistry, Massachusetts Institute of Technology
1995-1999 Work as Habilitand in Chemistry, University of Frankfurt (Mentor: C. Griesinger)

Honors and Awards

2015 Best PhD thesis advisor award, University Frankfurt.
2015 Szent-Györgyi Albert lecturer in Budapest
2014 "Scientist of the Year" of Kassel Foundation, University Frankfurt.
2012 Department Prize for Teaching, University Frankfurt
2006 1822-Prize for Teaching; University Frankfurt
2002- Vertrauensdozent of the "Studienstiftung des deutschen Volkes"
2001 Pew Scholar for Biomedical Sciences, Fellow of the Alfred P. Sloan Foundation
2000 Karl Winnacker Preis of Aventis Foundation
1999 Gerhard Hess Preis of DFG
1996 Liebig Stipend of the Fonds der Chemischen Industrie
1993-1995 Human Capital and Mobility Fellow, EU.
1993 Studienabschlusspreis of the Fonds der Chemischen Industrie, Promotion

- 1989-1993 Member of the Graduate program: "Chemische und Biologische Synthese von Wirkstoffen", Institut für Organische Chemie, Frankfurt/Main.
1987-1990 Member of the "Studienstiftung des Deutschen Volkes"

Research Interests

Structural Biology of Proteins and RNA studied by NMR spectroscopy
Time-Resolved NMR spectroscopy
RNA Folding and Regulation
Protein Folding; non-native states of proteins
NMR-based drug design (kinases, phosphatases, GPCRs)
Synthesis of isotope labelled RNA, DNA, peptides and photolabile compounds

Member of Editorial Boards/Scientific Committees

ChemBioChem, Board of ISMAR (2002-2010), ICMRBS Council (2006-2016), Kuratorium des Strüngmann-Forums, Kuratorium der Rolf-Sammet-Stiftung, Kuratorium der Oswald- und Boris-Rajewski-Stiftung, Preiskommission der GDCh August-Wilhelm-von-Hofmann-Denk Münze (2009-2015), Preiskommission des Frankfurter Biophysikpreises der Oswald-Stiftung, Member of the „Wissenschaftliche Gesellschaft der Johann Wolfgang Goethe-Universität Frankfurt“, Kuratorium des „Centres for Dialogue“, Kuratorium der Angewandten Chemie.

Organization of Large International Conferences

- 2002 iLab: G-protein coupled receptors (together with G. Wess, Aventis)
2003 iLab: RNA targeting (together with G. Wess, Aventis, M. Göbel, Uni Frankfurt)
2004 iLab: Systems Biology challenges Chemistry (together with G. Wess, Aventis)
2007 ICMRBS Göttingen (co-organizer)
2009 GDCh Wissenschaftsforum Frankfurt (local organizer)
2011 EUROMAR Frankfurt (co-organizer), GDCh Wissenschaftsforum Bremen (scientific committee), International symposium of the German Society for Biochemistry and Molecular Biology (scientific committee)
2013 Elected Co-Chair Gordon Conference: Biopolymers

Scientific Advisory Boards

Center for Magnetic Resonance Florence
Henry Wellcome Center Birmingham
Frankfurt Institute for Advanced Studies (2005-2012)

Reviewing activity

DFG Germany, NWO Netherlands, FWO Austria, CNS France, Wellcome-Trust UK, BBSRC UK, National Science Foundation USA, NIH USA, Science Foundation Belgium, Excellence programme Slovenia, German Israel Foundation, Czech Science Foundation, Klaus-Tschira-Preis, DAAD, Czech Science Foundation, EPSRC UK

Accounts in Chemical Research, Angew. Chem. Int. Ed., Biochemistry, Bioorganic and Medicinal Chemistry, Biophysical J., ChemBioChem, ChemComm, Chemistry A European Journal, ChemPhysChem, Febs Lett., J. Am. Chem. Soc., J. Biomol. NMR, J. Chem. Theor. and Computation, J. Magn. Reson., J. Mol. Biol., J. Phys. Chem., Magnetic Resonance in Chemistry, Nature, Nucleic Acids Res., Plos One, Proc. Natl. Acad. Sci. USA, RNA, Science, Structure.

Important publications

Protein Folding

J. Klein-Seetharaman, M. Oikawa, S.B. Grimshaw, J. Wirmer, E. Duchardt, T. Ueda, T. Imoto, L.J. Smith, C.M. Dobson, **H. Schwalbe** (2002) Long-range interactions within a non-native protein *Science* **295**, 1719-1722.

F. Buhr, S. Jha, M. Thommen, J. Mittelstaet, F. Kutz, **H. Schwalbe***, M. Rodnina*, A. Komar* (2016) Synonymous codons direct co-translational folding towards different protein conformations. *Mol. Cell* **61**, 341-351.

RNA Folding and Regulation

J. Buck, B. Fürtig, J. Noeske, J. Wöhnert, **H. Schwalbe** (2007) Time-resolved NMR methods resolving ligand-induced RNA folding at atomic resolution. *Proc. Natl. Acad. Sci. USA* **104**, 15699-15704.

A. Reining, S. Nozinovic, K. Schlepckow, F. Buhr, B. Fürtig*, **H. Schwalbe*** (2013) Three-state mechanism couples ligand and temperature sensing in riboswitches. *Nature* **499**, 355-359.

H. Steinert, F. Sochor, A. Wacker, J. Buck, C. Helmling, F. Hiller, S. Keyhani, J. Noeske, S. Grimm, M.M. Rudolph, H. Keller, R.A. Mooney, R. Landick, B. Suess, B. Fürtig*, J. Wöhnert*, **H. Schwalbe*** (2017) Pausing guides RNA folding to populate transiently stable RNA structures for riboswitch-based transcription regulation. *eLife*, e21297.

C. Helmling, D. Klötzner, F. Sochor, R.A. Mooney, A. Wacker, R. Landing, B. Fürtig, A. Heckel*, **H. Schwalbe*** (2018) Life times of metastable states guide regulatory signaling in transcription riboswitches. *Nat. Commun.*, accepted.

Membrane Proteins

J. Stehle, R. Silvers, K. Werner, D. Chatterjee, S. Gande, F. Scholz, A. Dutta, J. Wachtveitl, J. Klein-Seetharaman, **H. Schwalbe** (2014) Solution NMR characterization of simultaneous meta II and meta III decay kinetics in rhodopsin. *Angew. Chem. Intl. Ed.* **53**, 2078-2084.

V. Zickermann, C. Wirth, H. Nasiri, K. Siegmund, **H. Schwalbe**, C. Hunte, U. Brandt (2015) Mechanistic insight from the crystal structure of mitochondrial complex I. *Science* **347**, 44-49.

NMR-based Drug Design

C. Herbert, U. Schieborr, K. Saxena, J. Juraszek, F. De Smet, C. Alcouffe, M. Bianciotto, G. Saladino, D. Sibrac, D. Kudlinzki, S. Sreeramulu, A. Brown, P. Rigon, J.-P. Herault, G. Lassalle, T.L. Blundell, F. Rousseau, A. Gils, J. Schymkowitz, P. Tompa, J.-M. Herbert, P. Carmeliet, F.L. Gervasio*, **H. Schwalbe***, F. Bono* (2013) Molecular mechanism of SSR128129E, an extracellularly acting, small molecule, allosteric inhibitor of FGF receptor signaling. *Cancer Cell* **23**, 489-501.

List of Publications (peer-reviewed, reviews/editorials are listed separately)

(267 original contributions, 59 reviews, 3 patents)

*shared corresponding authorship is indicated

2018

269. S. Maiti, P. Saha, T. Das, I. Bessi, **H. Schwalbe**, J. Dash (2018) Human Telomeric G-quadruplex Selective Fluoro-isoquinolines Induce Apoptosis in Cancer Cells. *Bioconjugate Chemistry*, in press.
268. C. Helmling, D. Klötzner, F. Sochor, R.A. Mooney, A. Wacker, R. Landing, B. Fürtig, A. Heckel*, **H. Schwalbe*** (2018) Life times of metastable states guide regulatory signaling in transcription riboswitches. *Nat. Commun.*, in press.
267. L. Joedicke, J. Mao, G. Kuenze, C. Reinhart, T. Kalavacherla, H.R.A. Jonker, C. Richter, **H. Schwalbe**, J. Meiler, J. Preu, H. Michel, C. Glaubitz (2018) The molecular basis of subtype selectivity of human kinin G-protein-coupled receptors. *Nat. Chem. Biol.*, in press.

2017

266. F. Lehner, D. Kudlinzki, C. Richter, H. Müller-Werkmeister, K. Eberl, J. Bredenbeck. **H. Schwalbe***, R. Silvers* (2017) The Impact of Azidohomoalanine Incorporation on Protein Structure and Ligand Binding. *ChemBioChem* **18**, 2340-2350 (inside cover).
265. R. Schnieders, C. Richter, S. Warhaut, V. de Jesus, S. Keyhani, E. Duchardt-Ferner, H. Keller, J. Wöhnert, L.T. Kuhn, A.L. Breeze, W. Bermel, **H. Schwalbe**, B. Fürtig (2017) Evaluation of ¹⁵N-detected H-N correlation experiments on increasingly large RNAs. *J. Biomol. NMR* **69**, 31-44.
264. L. Lannes, P. Young, C. Richter, N. Morgner, **H. Schwalbe** (2017) Interaction of the N-terminal tandem domains of hnRNP LL with the BCL2 promoter i-motif DNA sequence. *ChemBiochem* **18**, 2033-2044 (ranked as "very important paper", inside cover).
263. Y. Liu, J.S. Sharp, D.H. Do, R.A. Kahn, **H. Schwalbe**, F. Buhr, J. Prestegard (2017) Mistakes in translation. Reflections on mechanism. *PLoS One* **12**, e0180566.
262. S. Heinzlmeir, J. Lohse, T. Treiber, D. Kudlinzki, V. Linhardt, S.L. Gande, S. Sreeramulu, K. Saxena, X. Liu, M. Wilhelm, **H. Schwalbe**, B. Küster, G. Médard (2017) Chemoproteomics-aided medicinal chemistry for the discovery of EPHA2 inhibitors. *ChemMedChem* **12**, 999-1011.
261. H. Steinert, F. Sochor, A. Wacker, J. Buck, C. Helmling, F. Hiller, S. Keyhani, J. Noeske, S. Grimm, M.M. Rudolph, H. Keller, R.A. Mooney, R. Landick, B. Suess, B. Fürtig*, J. Wöhnert*, **H. Schwalbe*** (2017) Pausing guides RNA folding to populate transiently stable RNA structures for riboswitch-based transcription regulation. *eLife* **6**, e21297 (featured in *Cell Chemical Biology*).
260. D. DiGiuseppi, B. Milorey, G. Lewis, N. Kubatova, S. Farrell, **H. Schwalbe**, R. Schweitzer-Stenner, (2017) Probing the Conformation Dependent Preferential Binding of Ethanol to Cationic Glycylalanylglycine in Water/Ethanol by Vibrational and NMR Spectroscopy. *J. Phys. Chem. B.* **121**, 5744-5758.
259. L. Herzig, I. Elamri, **H. Schwalbe***, J. Wachtveitl* (2017) Light-induced antibiotic release from a coumarin-caged compound on the ultrafast timescale. *Phys Chem Chem Phys.* **19**, 14835-14844..
258. D. Barthelmes, K. Barthelmes, K. Schnorr, H.R.A. Jonker, B. Bodmer, K.N. Allen, B. Imperiali, **H. Schwalbe** (2017) Conformational dynamics and alignment properties of loop lanthanide-binding tags (LBTs) studied in interleukin-1 β . *J. Biomol. NMR* **68**, 187-194.
257. K. Schnorr, D.B. Gophane, C. Helmling, E. Cetiner, K. Pasemann, B. Fürtig, A. Wacker, N.S. Qureshi, M. Gränz, D. Barthelmes, H.R.A. Jonker, E. Stirnal, S.Th. Sigurdsson, **H. Schwalbe** (2017) Impact of spin label rigidity on extent and accuracy of distance information from PRE data. *J. Biomol. NMR* **68**, 53-63.
256. J. Wirmer-Bartoschek, L.E. Bendel, H.R.A. Jonker, J.T. Grün, F. Papi, C. Bazzicalupi, L. Messori, P. Gratter*, **H. Schwalbe*** (2017) The NMR solution structure of a ligand/hybrid-2-G-quadruplex complex reveals structural rearrangements that facilitate ligand binding. *Angew. Chem. Intl. Ed.* **56**, 7102-7106.

255. 254. X. Cai, Y.M. Shi, N. Pöhlmann, O. Revermann, I. Bahner, S.J. Pidot, F. Wesche, H. Lackner, C. Büchel, M. Kaiser, C. Richter, **H. Schwalbe**, T.P. Stinear, A. Zeeck, H.B. Bode (2017) Structure and Biosynthesis of Isatropolones, Bioactive Amine-Scavenging Fluorescent Natural Products from *Streptomyces* Gö66. *Angew. Chem. Intl. Ed.* **56**, 4945-4949.

254. H. R. Nasiri*, K. Hohmann, M. G. Hatemler, **H. Schwalbe** (2017) in vitro production of reactive oxygen species (ROS) by sampangine. *Med. Chem. Res.* **26**, 1170-1175.

253. S. Warhaut, K.R. Mertinkus, P. Höllthaler, B. Fürtig, M. Heilemann, M. Hengesbach, **H. Schwalbe** (2017) Ligand-modulated folding of the full-length adenine riboswitch probed by NMR and single-molecule FRET spectroscopy. *Nucl. Acids Res.* **45**, 5512-5522.

252. C. Helmling, A. Wacker, M.T. Wolfinger, I.L. Hofacker, M. Hengesbach, B. Fürtig, **H. Schwalbe** (2017) NMR structural profiling of transcriptional intermediates reveals riboswitch regulation by metastable RNA conformations. *J. Am. Chem. Soc.* **139**, 2647-2656.

251. Y.B. Kim, A. Wacker, K. von Laer, V. Rogov, B. Suess, **H. Schwalbe** (2017) Ligand binding to 2'-deoxyguanosine sensing riboswitch in metabolic context. *Nucl. Acids Res.* **45**, 5375-5386.

2016

250. J. Henker, J. Wirmer-Bartoschek, L.E. Bendel, Y.G. Xiang, C. Fu, K. Harms, **H. Schwalbe**, E. Meggers (2016) Progress in the synthesis and bioactivity of hexacoordinate silicon(IV) complexes. *European Journal of Inorganic Chemistry* **32**, 5161-5170.

249. D. Daube, V. Aladin, J. Heiliger, J. Wittmann, D. Barthelmes, C. Bengs, **H. Schwalbe**, B. Corzilius (2016) Heteronuclear cross-relaxation under solid-state dynamic nuclear polarization. *J. Am. Chem. Soc.* **138**, 16572-16575.

248. J. Grote, D. Krysciak, K. Petersen, S. Güllert, C. Schmeisser, K.U. Förstner, H.B. Krishnan, **H. Schwalbe**, N. Kubatova, W.R. Streit (2016) The absence of the N-acyl-homoserine-lactone autoinducer synthase genes *tral* and *ngrl* increases the copy number of the symbiotic plasmid in *Sinorhizobium fredii* NGR234. *Front. Microbiol.* **7**, 1848.

247. J. Hahn, S. Thalmann, A. Migur, R. Freiherr von Boeselager, N. Kubatova, E. Kubareva, **H. Schwalbe**, E. Evgenieva-Hackenberg (2016) Conserved small mRNA with an unique extended Shine-Dalgarno sequence. *RNA Biol.*, in press.

246. S. Heinzlmeir, D. Kudlinzki, S. Sreeramulu, S. Klaeger, S.L. Gande, V. Linhardt, M. Wilhelm, H. Qiao, D. Helm, B. Ruprecht, K. Saxena, G. Medard, **H. Schwalbe***, B. Küster* (2016) Chemical proteomics and structural biology define EPHA2 inhibition by clinical kinase drugs. *ACS Chem. Biol.* **11**, 3400-3411.

245. L. Andernach, L. Sandjo, J. Liermann, R. Schlämann, C. Richter, J. Ferner, **H. Schwalbe**, A. Schüffler, E. Thines, T. Opatz (2016) Terphenyl Derivatives from *Allantophomopsis lycopodina*. *J. Nat. Prod.* **79**, 2718-2725.

244. S.L. Gande, K. Saxena, S. Sreeramuulu, V. Linhard, D. Kudlinzki, S. Heinzlmeir, A. J. Reichert, A. Skerra, B. Küster, **H. Schwalbe** (2016) Expression and purification of EPHA2 tyrosine kinase domain for crystallographic and NMR studies. *ChemBioChem* **17**, 2257-2263.

243. K. Stellos, A. Gatsiou, K. Stamatelopoulos, L.P. Matic, D. John, F.F. Lunella, N. Jaé, O. Rossbach, C. Amrhein, F. Sigala, R.A. Boon, B. Fürtig, Y. Manavski, X. You, S. Uchida, T. Keller, J.N. Boeckel, A. Franco-Cereceda, L. Maegdefessel, W. Chen, **H. Schwalbe**, A. Bindereif, P. Eriksson, U. Hedin, A.M. Zeiher, S. Dimmeler (2016) Adenosine-to-inosine RNA editing controls cathepsin S expression in atherosclerosis by enabling HuR-mediated post-transcriptional regulation. *Nature Med.* **22**, 1140-1150.

242. M. Kaushik, T. Bahrenberg, T.V. Can, M.A. Caporini, R. Silvers, J. Heiliger, A.A. Smith, **H. Schwalbe**, R.G. Griffin, B. Corzilius (2016) Gd^{III+} and Mn^{II+} complexes for dynamic nuclear polarization: small molecular chelate polarizing agents and applications with site-directed spin labeling of proteins. *Phys Chem Chem Phys.* **18**, 27205-27218 (in-side cover).

241. A. Chauhan, R. Paul, M. Debnath, I. Bessi, S. Mandal, **H. Schwalbe**, J. Dash (2016) Synthesis of fluorescent binaphthyl amines that bind c-myc G-quadruplex DNA and repress c-myc expression. *J. Med. Chem.* **59**, 7275-81.
240. W. Zhu, R. Silvers, **H. Schwalbe**, T. Keiderling (2016) Reduced and mutant lysozyme refolding with lipid vesicles. Model study of impact of disulfides on equilibria and dynamics. *Biochim. Biophys. Acta* **1864**, 1083-1092.
239. A.H. Nasiri, K. Saxena, J. W. Bats, H.R. Nasiri*, **H. Schwalbe*** (2016) Biophysical investigation and conformational analysis of p38 α kinase inhibitor doramapimod and its analogues. *MedChemCom*, **7**, 1421-1428.
238. M. Debnath, S. Ghosh, D. Panda, I. Bessi, **H. Schwalbe**, K. Bhattacharyya, J. Dash (2016) Small Molecule Regulated Dynamic Structural changes of Human G-quadruplexes. *Chemical Science* **7**, 3279-3285.
237. B. Fürtig*, R. Schnieders, C. Richter, H. Zetzsche, S. Keyhani, C. Helmling, H. Kovacs, **H. Schwalbe*** (2016) Direct ^{13}C -detected NMR Experiments for Mapping and Characterization of Hydrogen Bonds in RNA. *J. Biomol. NMR* **64**, 207-21.
236. J. Thevarpadam, I. Bessi, O. Binas, D.G. Schmidt, C. Slavov, H.R.A. Jonker, J. Wachtveitl, **H. Schwalbe***, A. Heckel* (2016) Photoresponsive Formation of an Intermolecular Minimal G-Quadruplex Motif. *Angew. Chem. Int. Ed.* **55**, 2738-2742.
235. F. Buhr, S. Jha, M. Thommen, J. Mittelstaet, F. Kutz, **H. Schwalbe***, M. Rodnina*, A. Komar* (2016) Synonymous codons direct co-translational folding towards different protein conformations. *Mol. Cell* **61**, 341-351 (recommended by faculty1000).
234. Y. Pavan Kumar, P. Saha, D. Saha, I. Bessi, **H. Schwalbe**, S. Chowdhury, J. Dash (2016) Fluorescent Dansyl-guanosine conjugates that bind c-myc promotor G-quadruplex and down-regulate c-myc expression. *Chembiochem* **17**, 388-393.
233. F. Sochor, R. Silvers, D. Müller, C. Richter, B. Fürtig, **H. Schwalbe** (2016) ^{19}F -labeling of the adenine H2-site to study large RNAs by NMR spectroscopy. *J. Biomol. NMR* **64**, 63-74.
232. J. Heering, H.R.A. Jonker, F. Löhr, **H. Schwalbe**, V. Dötsch (2016) Structural investigations of the p53/p73 homologs from the tunicate species *Ciona intestinalis* reveal the sequence requirements for the formation of a tetramerization domain. *Protein Sci.* **25**, 410-22.
- 2015**
231. O. Schimming, V.L. Challinor, N.J. Tobias, H. Adihou, P. Grün, L. Pöschel, C. Richter, **H. Schwalbe**, H.B. Bode (2015) Structure, Biosynthesis, and Occurrence of Bacterial Pyrrolizidine Alkaloids. *Angew. Chem. Int. Ed.* **54**, 12702-5.
230. D. Chatterjee, C.E. Eckert, C. Slavov, K. Saxena, B. Fürtig, C.R. Sanders, V.V. Gurevich, J. Wachtveitl*, **H. Schwalbe*** (2015) Influence of arrestin on the photodecay of bovine rhodopsin. *Angew. Chem. Int. Ed.* **54**, 13555-60 (ranked as "very important paper")
229. D. Barthelmes, M. Gränz, K. Barthelmes, K.N. Allen, B. Imperiali, T. Prisner*, **H. Schwalbe*** (2015) Encoded Loop-Lanthanide-Binding Tags for Long-Range Distance Measurements in Proteins by NMR and EPR Spectroscopy. *J. Biomol. NMR* **63**, 275-82.
228. A. Scharow, M. Raab, K. Saxena, S. Sreeramulu, D. Kudlinzki, S. Gande, C. Dötsch, E. Kurunci-Csacsko, S. Kläger, B. Küster, **H. Schwalbe**, K. Strebhardt, T. Berg (2015) Optimized PIK1 PBD inhibitors based on Poloxin induce mitotic arrest and apoptosis in tumor cells. *ACS Chem Biol.* **10**, 2570-79.
227. D. Kudlinzki*, V.L. Linhard, K. Saxena, S. Sreeramulu, S. Gande, U. Schieborr, M. Dreyer, **H. Schwalbe*** (2015) High-resolution crystal structure of cAMP-dependent protein kinase from *Cricetulus griseus*. *Acta Crystallogr F Struct Biol Commun.* **71**, 1088-93.

226. D. Panda, M. Debnath, S. Mandal, I. Bessi, **H. Schwalbe**, J. Dash (2015) A Nucleus-Imaging Probe That Selectively Stabilizes a Minor Conformation of c-MYC G-quadruplex and Down-regulates c-MYC Transcription in Human Cancer Cells. *Sci Rep.* **5**, 13183.
225. J. Becker-Baldus, C. Bamann, K. Saxena, H. Gustmann, L.J. Brown, R.C.D. Brown, C. Reiter, E. Bamberg, J. Wachtveitl, **H. Schwalbe**, C. Glaubitz (2015) Enlightening the photoactive site of channelrhodopsin-2 by DNP-enhanced MAS NMR. *Proc. Natl. Acad. Sci. USA* **112**, 9896-901.
224. C. Helmling, S. Keyhani, F. Sochor, B. Fürtig, M. Hengesbach, **H. Schwalbe** (2015) Rapid NMR screening of RNA secondary structure and binding. *J. Biomol. NMR* **63**, 67-76..
223. D. Chatterjee, D. Kudlinzki, V. Linhard, K. Saxena, U. Schieborr, S.L. Gande, J.P. Wurm, J. Wöhnert, R. Abele, V.V. Rogov, V. Dötsch, H. Osiewacz, S. Sreeramulu*, **H. Schwalbe*** (2015) Structure and Biophysical Characterization of the S-adenosylmethionine Dependent O-methyltransferase PaMTH1, a Putative Enzyme Accumulating during Senescence of *Podospora anserina*. *J. Biol. Chem.* **290**, 16415-30.
222. L. Lannes, S. Halder, Y. Krishnan, **H. Schwalbe** (2015) Tuning the pH-response of i-motif DNA oligonucleotides. *ChemBioChem* **16**, 1647-1656.
221. I. Bessi, H.R.A. Jonker, C. Richter, **H. Schwalbe** (2015) Involvement of Long-Lived Intermediate States in the Complex Folding Pathway of the Human Telomeric G-Quadruplex. *Angew. Chem. Int. Ed.* **54**, 8444-8448.
220. D. Wagner, J. Rinnenthal, F. Narberhaus, **H. Schwalbe** (2015) Mechanistic insights into temperature-dependent regulation of the simple cyanobacterial hsp17 RNA thermometer at base pair-resolution. *Nucl. Acids Res.* **43**, 5572-5585.
219. R. Silvers, H. Keller, **H. Schwalbe***, M. Hengesbach* (2015) Differential Scanning Fluorimetry for Monitoring RNA Stability. *ChemBioChem* **16**, 1109-1114 (inside cover).
218. H.R. Nasiri*, J. Ferner, C. Tükek, R. Krishnathas, **H. Schwalbe*** (2015) A concise one-step synthesis of primin and iso-primin. *Tetrahedron Lett.* **56**, 2231-2233.
(featured in <http://pubs.acs.org/doi/pdf/10.1021/jacs.6b08856>)
217. C. Özçoban, T. Halbritter, S. Steinwand. L.-M. Herzig, J. Kohl-Landgraf, N. Askari, F. Groher, B. Fürtig, C. Richter, **H. Schwalbe**, B. Suess, J. Wachtveitl, A. Heckel (2015) Water-Soluble Py-BIPS Spiropyrans as Photoswitches for Biological Applications. *Organic Letters* **17**, 1517-20.
216. N. Bruns, W. Collisi, S. Bernecker, M. Stadler, C. Richter, **H. Schwalbe**, M. Kalesse (2015) Spirangien Derivatives from the Myxobacterium *Sorangium cellulosum*: Isolation, Structure Elucidation, and Biological Activity. *European Journal of Organic Chemistry* **4**, 847-857.
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Patents

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