

Curriculum Vitae - DANIEL COMAN

Yale University School of Medicine
Department of Diagnostic Radiology
The Anlyan Center for Medical Research & Education
300 Cedar Street, N144 TAC
New Haven, CT 06510

HIGHLIGHTS

- Extensive experience in Nuclear Magnetic Resonance Spectroscopy and Nuclear Magnetic Resonance Imaging
- Experience in solid-state DNA synthesis, high-pressure liquid chromatography (HPLC), optical spectroscopy.

EDUCATION

- Ph.D. Biophysics (2005), Wesleyan University, Middletown, CT 06459
Thesis title: *Structural Energetics of DNA Double and Triple Helices and Their Interactions with Metal Ions.*
Advisor: Professor Irina M. Russu
- B.S. Theoretical Physics (1997), University of Bucharest, Romania
Thesis title: *Adiabatic Theory and Gell-Mann Law.*
Advisor: Professor Gheorghe Nenciu

RESEARCH EXPERIENCE

2005- present

Associate Research Scientist, Department of Diagnostic Radiology, Yale University School of Medicine

- Develop a sensitive and non-invasive method for measurements of temperature and pH in rat brain based on contrast agents containing paramagnetic ions.
- Localized detection in real-time of 2-fluoro-2-deoxy-D-glucose in rat brain by ^{19}F NMR spectroscopy
- Measurement of brain metabolism under various physiological conditions using ^{13}C -1,6-glucose and/or other ^{13}C labeled compounds.

1998-2004

Teaching/Research Assistant, Molecular Biophysics Program, Wesleyan University, Middletown, CT 06459

- Studied stability and dynamics of single base-pairs in several nucleic acid structures (DNA double and triple helices) using NMR on Varian INOVA 500 and Varian VXR 400 spectrometers.
- Synthesized DNA oligonucleotides using an Applied Biosystems 381A DNA synthesizer and purified them by high-pressure liquid chromatography.

1997-1998

Research Assistant, National Institute for Physics and Engineering of Materials, Bucharest, Romania.

- Studied electronic properties of Quantum Dots systems using computer simulations.

AFFILIATIONS

- International Society for Magnetic Resonance in Medicine
- International Society for Oxygen Transport to Tissue
- New York Academy of Sciences

PUBLICATIONS

1. Hyder F, Sanganahalli BG, Herman P, **Coman D**, Maandag NJG, Behar KL, Blumenfeld H, Rothman DL (2010) Neurovascular and neurometabolic couplings in dynamic calibrated fMRI: transient oxidative neuroenergetics for block-design and event-related paradigms. *Front Neuroenerg* doi: 10.3389/fnene.2010.00018
2. Herman P, Sanganahalli BG, **Coman D**, Blumenfeld H, Hyder F (2010) TRANSIENT NEURAL ENERGETICS BY FMRI FOR BRIEF AND LONG STIMULI. *Hirosaki Med J* 61(Suppl.):S11-S22
3. **Coman D**, Trübel HK, Hyder F (2010) Brain Temperature by Biosensor Imaging of Redundant Deviation in Shifts (BIRDS): Comparison between TmDOTP⁵⁻ and TmDOTMA⁻. *NMR Biomed.* **23**(3):277-285.
4. **Coman D**, Trübel HK, Rycyna RE, Hyder F (2009) Brain temperature and pH measured by ¹H chemical shift imaging of a thulium agent. *NMR Biomed.* **22**(2): 229-239
5. Maandag NJG, **Coman D**, Sanganahalli BG, Herman P, Smith AJ, Blumenfeld H, Shulman RG, Hyder F (2007) Energetics of neuronal signaling and fMRI activity. *Proc Natl Acad Sci USA.*, Dec 18; **104**(51): 20546-20551.
6. **Coman D** and Russu IM (2005) A Nuclear Magnetic Resonance Investigation of the Energetics of Base Pair Opening Pathways in DNA. *Biophys J.*, **89**(5):3285-3292
7. **Coman D** and Russu IM (2005) Base-pair opening in three DNA-unwinding elements. *Journal of Biological Chemistry*, **280**(21): 20216-20221.
8. **Coman D** and Russu IM (2004) Site-resolved stabilization of a DNA triple helix by magnesium ions. *Nucleic Acids Research*, **32**(3): 878-883.
9. **Coman D** and Russu IM (2003) Probing hydrogen bonding in a DNA triple helix using protium-deuterium fractionation factors. *Journal of the American Chemical Society*, **125**(22): 6626-6627.
10. **Coman D** and Russu IM (2002) Site-resolved energetics in DNA triple helices containing G.TA and T.CG triads. *Biochemistry*, **41**(13): 4407-4414.

HONORS AND AWARDS

- 2004** Peterson Fellowship for graduate study in biochemistry, Wesleyan University
2009 "EPOS Cum laude award" at the 26th Annual ESMRMB Meeting

INVITED LECTURE PRESENTATION

- Probing the interactions of a DNA triple helix with metal ions by proton exchange and NMR spectroscopy. 13th Conversation in Biomolecular Structure and Dynamics, Albany 2003.

TEACHING

- Teaching Assistant for Biomedical Engineering Laboratory

POSTER PRESENTATIONS

1. **Coman D, Trubel, Hyder F (2007)** *In Vivo* ^1H CSI Measurement of Temperature and pH in Rat Brain. *Brain 07* and *PET 07*, May 20-24
2. **Coman D, Sanganahalli BG, Cheng D, McCarthy T, Rothman D, Hyder F (2007)** *In Vivo* ^{19}F CSI Detection of FDG and FGD-6P in Rat Brain, *Brain 07* and *PET 07*, May 20-24
3. **Coman D, Sanganahalli B.G, Cheng D, McCarthy T, Rothman D and Hyder F (2007)** *In Vivo* ^{19}F CSI of 2-Fluoro-2-Deoxy-D-Glucose and 2-Fluoro-2-Deoxy-D-Glucose-6-Phosphate in Rat Brain. *Proc Intl Soc Mag Reson Med*, **2988**, 14:00, page 577
4. **Coman D and Hyder F (2007)** *In Vivo* Temperature Assessment Using ^1H NMR Chemical Shifts of NAA-Water and TmDOTP $^{5-}$. *Proc Intl Soc Mag Reson Med*, **3381**, 14:00, page 646
5. **Trubel H., Herman P., Sanganahalli B., Coman D., Doll H., Kipfmueller F., Hyder F. (2007)**, Efficiency of different selective brain cooling modes. In: ISOTT 35th Annual Meeting, Uppsala, Sweden
6. **Trubel H., Herman P., Sanganahalli B., Coman D., Doll H., Kipfmueller F., Hyder F. (2007)**, Mechanism of heat transfer during selective pharyngeal brain cooling. In: ISOTT 35th Annual Meeting, Uppsala, Sweden
7. **Trubel H., Herman P., Sanganahalli B., Coman D., Doll H., Kipfmueller F., Hyder F. (2007)**. External vs. pharyngeal selective brain cooling exhibit different blood flow pattern. In: ISOTT 35th Annual Meeting, Uppsala, Sweden
8. **Coman D, Trubel H, Rycyna R.E, Caldwell M, Hyder F (2006)** Simultaneous ^1H MRS Measurement of Temperature and pH with a Lanthanide Complex. *Proc Intl Soc Mag Reson Med*, **3240**, 14:30, page 615
9. **Coman D, Trubel H, Sanganahalli B.G and Hyder F (2006)** Stimulation-Induced Changes in Temperature and pH Measured Simultaneously by ^1H CSI. *Proc Intl Soc Mag Reson Med*, **99**, 14:20, page 23
10. **Every A. E., Coman D and Russu I M (2005)**. Characterization of hydrogen bonds in double-helical DNA using H/D fractionation factors. 14th Conversation in Biomolecular Structure and Dynamics, Albany, New York.
11. **Coman D and Russu I M (2004)**. Energetics of base-pair opening in DNA Unwinding Elements. 48th Biophysical Society Annual Meeting, Baltimore, Maryland.
12. **Every A E, Coman D and Russu I M (2004)**. Effects of magnesium ions on the dynamics of double-helical DNA. 48th Biophysical Society Annual Meeting, Baltimore, Maryland.
13. **Coman D and Russu I M (2003)**. Probing the interactions of a DNA triple helix with metal ions by proton exchange and NMR spectroscopy. 13th Conversation in Biomolecular Structure and Dynamics, Albany, New York.
14. **Coman D and Russu I M (2003)**. Site-resolved energetics in a DNA Unwinding Element. 13th Conversation in Biomolecular Structure and Dynamics, Albany, New York.