

INTERVIEW QUESTIONS/Ronald J. Midura, Ph.D:

1. What is your job title? What are your job responsibilities?

I am an Associate Staff member of the Dept. of Biomedical Engineering and Orthopaedic Research Center at The Cleveland Clinic Foundation. I also maintain Associate Prof. faculty positions in the Dept. of Molecular Medicine in the Cleveland Clinic Lerner College of Medicine at Case Western Reserve Univ., and the Dept. of Biol., Geology, and Environmental Sci. at Cleveland State Univ. My primary responsibility is to maintain a nationally known, federally funded research program on bone biology and tissue engineering. My secondary responsibility is to provide faculty advice, guidance and support for graduate and medical students, postdoctoral and resident fellows, as well as clinical colleagues interested in collaborating with my research program.

2. What is your background? (education and training)

1974-1978	B.A. in Biology from the University of Rochester, Rochester NY
1978-1984	Ph.D. in Biology & Biochemistry from Case Western Reserve University, Cleveland OH
1984-1987	NIH Postdoctoral Fellow, Proteoglycan Chemistry Section, Mineralized Tissue Res. Branch, Natl. Inst. of Dental Research, NIH, Bethesda, MD.
1987-1992	Staff Fellow, Proteoglycan Chemistry Section, BRB, NIDR, NIH, Bethesda, MD.
1992-1995	Assistant Prof., Biochem. & Molecular Biol. Lab., Dept. Orthop. Surg., Univ. Iowa, Iowa City
1995-2002	Assistant Staff, Musculoskel. Biol. Sect., Dept. Biomed. Engineering, Cleveland Clinic Fdn.
1995-2004	Adjunct Assistant Professor, Dept. Biology, Case Western Reserve Univ., Cleveland, OH
2002-present	Associate Staff, Orthop. Res. Ctr. & Dept. Biomed. Engineering, Cleveland Clinic Fdn.
2003-present	Adjunct Associate Professor, Dept. Biol., Geo. & Environ. Sci., Cleveland State Univ.
2004-present	Adjunct Associate Professor, Dept. Applied Eng., Cleveland State Univ.
2005-present	Associate Professor, Dept. Mol. Med., CCLCM at Case Western Reserve Univ.

3. Where are you employed? Can you tell me something about the company you work for?

I am employed at The Cleveland Clinic Foundation. The CCF is one of the top ranked medical centers in the USA and is one of the largest employers in the Northeast Ohio region. Its Lerner Research Institute is nationally ranked with respect to its quality of research and funding levels, and is now affiliated with CWRU.

4. What is a typical day at work like for you?

A typical day begins around 7:30 am starting with email correspondence and working towards phone correspondence after 9:00 am. I have regularly scheduled meetings with lab personnel in small groups on a daily basis. Usually I will have a committee meeting (institutional, divisional, or departmental levels)

about every other day. Once a week I meet with my entire lab program where we discuss one investigator's research findings or a late breaking important article in the bone literature. Much of my day is involved with writing either manuscripts of work completed, reviews of submitted manuscripts for publication in journals, or grant applications for further funding of my research program.

5. Can you tell me about any particular projects that you are currently working on?

Research Projects Ongoing or Completed During the Last 3 Years

BL00405 (Midura, Ronald J.) NSBRI, NASA	4/1/04 – 3/31/07	25% \$150,000/yr
Effects of Simulated Weightlessness on Bone Fracture Repair and on Bone-derived Stem Cells		
Determine the effects of simulated hypogravity on the repair of bone trauma and on the number and osteogenic quality of bone-derived stem cells. <i>In vivo</i> micro-CT imaging is used to monitor in 3D a bone tissue regeneration response longitudinally.		
Biomedical Sci. Grant (Midura, Ronald J.) Arthritis Foundation	1/1/02 – 12/31/04	15% \$90,000/yr
PTHrP Regulates Periosteal Neochondrogenesis		
Assess the effects of PTHrP on regulating the neochondrogenic expression of periosteal progenitor cells, and its effects on the hypertrophic maturation of neocartilage derived from periosteum. Confocal microscopic imaging is used to monitor in 3D the location and progression of chondrocyte hypertrophy and matrix calcification reactions in explanted periosteum.		
Orthofix Award (Midura, Ronald J.) Orthopaedic Research & Education Foundation	1/1/01 – 12/31/04	20% \$127,000/yr
Optimizing Bone Healing Using Pulsed Electromagnetic Fields		
Program project to determine the mechanism of action underlying the healing effects of pulsed electromagnetic fields on bone fractures. <i>In vivo</i> micro-CT imaging is used to monitor in 3D a bone tissue regeneration response longitudinally.		
RO1-AR45171 (Midura, Ronald J.) NIH/NIAMS	8/1/99 – 7/31/03	35% \$129,000/yr
A Mechanism for Bone Sialoprotein to Nucleate Bioapatite		
Determine the structure/function relationship between bone sialoprotein and bioapatite addressing this protein's mechanism for apatite nucleation. Confocal microscopic imaging is used to monitor in 3D the location and progression of biomineralization reactions in osteoblast cultures.		

6. What general work skills do you use on a daily basis?

Reading, writing, communication, observational skills, various computer skills, analytical and mathematical, biology and biochemistry knowledge, general engineering principles, diagnostic skills

7. What advice do you have for someone who wants to pursue a career in biotechnology?

Firstly, complete a Bachelor's degree with a math, engineering, or science major. Secondly, enroll in a Thesis Masters graduate program, OR apply for a biotechnology technician position at the entry level in a university, medical center, or biotechnology firm. Either of these choices will provide you with the

necessary bench-level training and academic knowledge to determine your individual career path. After a few years, and providing your experience at this level is positive, then you will be poised to pursue an advanced degree (either Ph.D. or M.D.) for a higher-level position in biotechnology (professor, clinician, lab director). For those that have identified clinical science as their target, then pursuing an M.D. degree would be optimal for that purpose. For those satisfied at the Master's level, there are manager level positions available.

8. Where do you see opportunities in Biotechnology in the next 5-10 years in Northeast Ohio?

Biotechnology is a broad topic and has changed its top-line emphasis over the last few decades. Biochemistry, chemical and electrical engineering were the hot positions in the 1970s. Molecular biology and computer science were tops in the 1980s and 1990s. Molecular genetics and nanotechnology are currently front running disciplines in the 21st century. Tissue engineering is another area that continues to flourish. All of these disciplines are currently active in universities, medical centers, and biotechnology firms. Also, keep in mind the aerospace industry here at NASA-Glenn Research Center in Cleveland.