

**Affiliation:** Masaryk University, Faculty of Medicine  
**Study program:** PhD program Biomedical Sciences  
**Specialization:** **Cell and Tissue Morphology**  
**Workplace:** Department of Histology and Embryology  
**Form of study:** Full-time

**Supervisor:** PharmDr. Zuzana Holubcová, Ph.D. , zholub@med.muni.cz

**Title:** *Morphological analysis of human oocytes*

**Brief annotation (max 200 words):** Egg quality is a crucial prerequisite for proper embryo development. In humans, poor developmental competence of oocytes is a major obstacle to conception and a cause of female infertility. In the absence of detailed knowledge of subcellular morphology, criteria of egg quality remain elusive. Thus, we aim to systematically study the ultrastructural morphology of human oocytes donated for research to determine structural changes underlying the acquisition of their developmental competence. In particular, we will use state-of-the-art light and electron microscopy techniques to qualitatively and quantitatively analyze the inner organization of female gametes in the course of meiotic maturation and after vitrification. Using this approach, we will generate the data that will extend our knowledge of oogenesis and the factors compromising the egg's developmental capacity. Detailed morphological description of human oocytes, including commonly occurring cytoplasmic abnormalities, will not only improve our understanding of the fundamentals of human reproduction, but it will also provide a scientific background to better predict egg developmental potential in assisted reproduction.

**Funding:** selected candidate is expected to apply for external funding

**Requirements:**

**Education:** university graduate - master degree in the area of molecular/cell/developmental biology or medical/pharmaceutical/veterinary sciences  
**Skills:** solid background in reproductive biology, micromanipulation skills are advantage, independence, analytical skills, resilience, motivation, communication skills  
**English:** level B2 and higher

Requirements to successfully obtain a PhD degree in the Biomedical Sciences PhD program:

- Have at least one first author publication in an international research journal with an impact factor above the median IF in the field or have two first author publications with the IF in Q3. Importantly, the affiliation to the Faculty of Medicine, Masaryk University must be listed.
- Gain a set of minimum credits (240 ECTS in 4-year study period), pass 4 faculty-wide courses + an English language course and 4 field-specific courses.
- Pass the doctoral state exam.
- Take an active part in teaching.

**Masaryk University, Faculty of Medicine**

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Please quote the Reference Number in your reply.

- Participate in the annual PhD conference.
- Present research outcomes at least once at an international conference (poster, presentation).
- Spend at least one month abroad on an internship

**Additional information on the supervisor:** <https://www2.med.muni.cz/histology/zuzana-holubcova/>