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UPWr Base of Knowledge - link	https://bazawiedzy.upwr.edu.pl/info/seam?id=UPWr7d40858b78634e0490bcefc6fd0ab48&affil=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Agnieszka-Partyka
Personal website / Working group website:	https://upwr.edu.pl/en/research/leading-research-group/innovative-diagnostics-and-veterinary-therapy-inno-wet
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>NAWA - international project with France. Development of tools to create and analyze new extenders for semen cryopreservation. PPN/BIL/2018/1/00146/U/00017. 2019-2021. PI</p> <p>NAWA - International multicentric platform as a key element for the effective scientific research. PPI/APM/2019/1/00044/U/00001. 2020-2022. RF</p> <p>NCBiR - Improvement of innovation and effectivity of programs of rescue of genetic resources in wild felidae by establishment of cell bank and implementation of in vitro embryo production into practice. NCBiR NR PBS3/B8/16/2015. 2014 – 2017. RF</p> <p>NCBiR - The development of prototypes of medical devices based on resources obtained from antler-derived multipotent stem cells; UODDEM-1-351/001. 2014-2016. Tasks 7, 8, 11, RF of three tasks.</p> <p>Contracted with other external partners</p> <p>Complex project of european bison protection by Lasy Panstwowe - Multivariate Monitoring of bison population" -Research Task „Gen Bank in Bison” - Project financed from "Fundusz Leśny" Ministerstwo Ochrony Środowiska pt.UMOWA NR OR.271. 3.10.2017, from 07.08.2017 r. – 2020. RF</p>
Research topic and funding	
1) PhD topic:	New way of chicken semen cryopreservation - a new insight into the mechanisms of cryodamages in sperm
2) Research discipline in Doctoral School	Veterinary Science
3) Short description of the research problem to be solved in the PhD:	<p>Cryopreservation is undoubtedly a harmful process and induces many unfavorable changes in the spermatozoa. During this process, spermatozoa are exposed simultaneously to damage caused by thermal shock, freezing and thawing, which consequently cause osmotic changes in the cell membrane and reorganization of its lipids and proteins. Cryopreservation requires protection of intracellular structures and biomolecules, and hence requires protective agents that are able to pass the cellular membrane. Permeating cryoprotective agents (CPAs), such as glycerol, DMSO (dimethyl sulfoxide) or DMA (dimethylacetamide) help lower the freezing point of the solution, minimize osmotic shock and reduce formation of lethal intracellular ice, but also cause damage to cells due to their chemical toxicity. Glycerol has contraceptive activity in poultry, and prior to insemination has to be removed. Because of this, DMA has been proposed as an alternative CPA, however, in chicken, sperm fertilizing ability of sperm cells cryopreserved with both glycerol or DMA is the same lower. Freezing solutions may also include non-permeable CPAs. These compounds, such as polymers, sugars or proteins, modulate intracellular ice-crystal formation and stabilize intracellular solute concentrations during vitrification. In recent years, we can observe a growing interest in non-permeating cryoprotectants used alone for preservation of mammalian sperm.</p> <p>The main goal of proposed PhD topic is an improvement of thawed chicken semen quality and fertility results by reduction of cell cryodamages avoiding the use of permeating cryoprotectants. We hypothesize that incorporation of non-permeable CPAs in vitrification medium and additionally using French straws, may protect sperm during freezing-thawing.</p> <p>It is planned to carry out four main research tasks, divided into several experiments. In Task 1 the impact of use of different molarities of some sugars and a polymer for chicken sperm vitrification will be checked. In Exp. 2 the best vitrification medium (from Exp. 1) will be supplemented with different concentrations of BSA and FBS. In Exp. 3, we will check 3 protocols of warming to achieve the best results of semen quality. In Task 2 we will use some amino-acids, which can scavenge free radicals and protect the cells. In Task 3 we will try to respond to the most important question: how does the molecular damage caused by the freezing–thawing process affect chicken sperm structure and function? In this regard we will analyze expression of genes related to apoptosis, oxidative stress, antioxidant enzymes and sperm quality. Moreover we will check lipid membrane characteristic on the ultrastructural level and also assess its physicochemical properties. Project will be completed by final analysis of hens artificial insemination results with the use of vitrified semen. (Task 4). Thus, we will be able to assess and validate the new way of chicken sperm vitrification.</p> <p>Our proposed way of semen vitrification meets the need for simplification of the more efficient method of chicken sperm cryopreservation, in order to make it available to large environmental and breeding conditions. In terms of potential contamination risk to a variety of cryogenic pathogens, this method meets the conditions of asepticity and could become reference procedure to be implemented in a bird semen cryobank.</p>
4) Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques):	<p>A prospective candidates should be a graduate in veterinary, medical or biological studies.</p> <p>Candidates should be specialized in reproductive medicine, veterinary and in reproductive biology.</p> <p>High fluency in English is demanded.</p> <p>High, positive motivation to execute the reserach in the field of advanced methods of assisted reproductive technologies is expected.</p> <p>Ability to perform clinical and laboratory part of the reserach.</p> <p>The candidates may be of Polish or fereign nationality (european or from other countries). Techniques demanded: semen collection and assessment-CASA system, flow cytometry.</p>
5) Details of the project to support PhD research	
a) Project title:	International multicentric platform as a key element for the effective scientific research
b) Agreement number:	PPI/APM/2019/1/00044/U/00001
c) Number of months in the project to support PhD (in months; starting from 1st of October 2021):	12
6) Project website:	http://nawa.upwr.edu.pl/index.php?go=1&lang=1