Identification of Artemia from Russia
Aim

- Experimental development of molecular-genetical testing of various Artemia populations
Research problems:

1. To investigate molecular markers and a polymorphism of a nuclear genome of Artemia from some Western Siberia lakes.

2. To carry out comparative genetical analysis of domestic and foreign Artemia populations.

3. To carry out preliminary analysis of phylogenetic relationship with primer COI of mitochondrial DNA.
Methodology:

1. Secretion and purification of DNA by a method chloroform-phenol extraction.
2. Definition of DNA concentration in a preparation, valuation of cleanliness and a fragmentation of genome DNA.
3. Performance polymerize chain reaction with use RAPD-primer (RAPD-PCR).
4. RAPD-PCR analysis.
PAPD- spectrum of the investigated samples:
1 - 100 bp Molecular Ruler DNA Size Standard (BioRad), 2, 3, 4 – Kulundinskoe lake; 5, 6, 7 – Medvegie lake; 8, 9, 10 – Abeji lake; 11, 12 – Bolshoe Jarovoe lake; 13 – Aktoban lake; 14, 15 – Nevidim lake; 16, 17 – Kurejnoe lake; 18 – Ulzaj lake; 19 – 10 kb Ladder
PAPD- spectrum of the investigated samples:
1 - 100 bp Molecular Ruler DNA Size Standard (BioRad), 2 – Okunevo lake, 3 – Sobachje lake, 4 – Voskresenskoe lake, 5 – Iljenei lake, 6, 7, 8 – A. urmiana, 9, 10 – A. tibetiana, 11 – A. tunisiana, 12 – A. franciscana SFB, 13, 14 – A. sinica, 15 - 10 kb Ladder
PAPD- spectrum of the investigated samples:
1 - 100 bp Molecular Ruler DNA Size Standard (Bio-Rad), 2 – A. sinica, 3, 4 – A. sp. Yemeng, 5 - Teke (Kazakhstan), 6, 7 – Kazakhstan, 8, 9 – Bayan-Tukhum (Mongolia), 10 - Uaidam (Mongolia), 11 - оз. Ikhtsaidam (Mongolia), 12 – Tukhum Lake Moveolka (Mongolia), 13 – A. salina, 14, 15 – Karabagaz-Gol, 16 – A. franciscana Lake Ingerbright North (Canada), 17 - 10 kb Ladder (СибЭнзим).
PAPD- spectrum of the investigated samples: :
1 - 100 bp Molecular Ruler DNA Size Standard (Bio-Rad), 2 - A. parthenogenetica Bameng (Mongolia); 3 - A. salina Wadi Nartrum (Egypt), 4 - A. persimilis (Argentina), 5 - A. sinica Haolebaoji (China), 6 - 10 kb Ladder (СибЭнзим).
UPGMA dendrogram on RAPD pattern of 50 Artemia samples
UPGMA dendrogram on RAPD pattern of 31 Artemia samples
Conclusions on the RAPD-PCR

1. RAPD-PCR method has allowed to establish relation and distinction of investigated Artemia populations by direct comparison of profiles.

2. All investigated Russian populations belong to one bunch.

3. It is possible to note proximity of samples from Russia, Kazakhstan, Turkmenistan and Mongolia, and also A. urmiana and A. tibetiana.
Preliminary analysis COI gene of mitochondrial DNA
Conclusions on analysis sequenation of mitochondrial rDNA

1. Construction of phylogenetic system of genus Artemia on the base of sequences mitochondrial DNA is perspective.
2. A. tibetiana, A. sinica, A. persimilis and A. franciscana are well detached species.
3. Phylogenetic relationship between Russian Artemia and other populations is demanded the further investigation.
4. Equipments in VNIIRO (Moscow) allow performing this work quickly and qualitatively.