# SUMMER INTERNSHIP BENCH PROJECTS (2010-2013)

*Note: Certain techniques were only demonstrated to the interns due to the high level of technical skill required of that technique and/or the logistics involved*

<table>
<thead>
<tr>
<th>BENCH PROJECTS TOPICS BY YEAR</th>
<th>MAIN TECHNIQUES INVOLVED</th>
<th>RESULTING PUBLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2010</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1 Nitric Oxide Production and Susceptibility of Different Sperm Population from the Same Semen Sample | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Sperm cryopreservation  
• Acrosome reaction  
• Density gradient separation  
• Sperm cryopreservation  
• DNA damage by TUNEL test  
• Nitric oxide measurement | - |
| 2 Does the Use of Super-Cool Ice-Blockers During Vitrification Improve 8-Cell Mouse Embryo Survival? | • Aseptic preparation of dishes  
• Transfer of embryos  
• Loading and unloading of Vitrification straws  
• Embryo manipulation and transfer  
• Embryo culture, survival and embryo development (cleavage and blastocyst)  
• Co-incubation in super cool ice blockers  
• Blastocyst development rate | - |
| 3 Improving the Predictive Value of the TUNEL Assay in Clinical Setting | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Density gradient separation  
• ROS measurement  
• DNA damage by TUNEL test | - |
| 4 Development of a Novel Alternative to Onsite Collection of Semen Samples in Men Seeking Infertility Treatment from Geographically Remote Sites | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• HOS test  
• Sperm morphology  
• Sperm cryopreservation  
• Acrosome reaction  
• DNA damage by TUNEL test | - |
| 5 Analyses of Catalase (CAT) Gene for Mutations/Polymorphisms in Male Infertility | • Sperm count and motility  
• ROS measurement  
• Selection of primers  
• DNA isolation  
• PCR | - |
<table>
<thead>
<tr>
<th>BENCH PROJECTS TOPICS BY YEAR</th>
<th>MAIN TECHNIQUES INVOLVED</th>
<th>RESULTING PUBLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2011</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BENCH PROJECTS TOPICS BY YEAR</td>
<td>MAIN TECHNIQUES INVOLVED</td>
<td>RESULTING PUBLICATION</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1 Assessing the Inter-, Intra- Observer and Longitudinal Variability in Routine and Advanced Semen Parameters | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Sperm morphology  
| 2 Evaluation of Semen Quality Following Preparation of Human Semen Specimens for ART: A Controlled Trial | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Hypo-osmotic swelling test  
• Preparation of sperm by double density gradient  
| 3 Proteomic Analysis of Differential Protein Expression in Mature and Immature Spermatozoa       | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Sperm morphology  
• Sperm preparation for separation of immature and mature sperm  
• Protein assay  
• In gel separation of proteins  
• Proteomic analysis utilizing one and 2 -Dimensional gel electrophoresis  
• LC-MS analysis of proteins  
• Bioinformatics analysis |                                                                                         |
| 4 Comparative Dynamics of Cryopreservation Induced Sperm DNA Damage Between Semen Samples Collected Onsite Versus Samples Remotely Collected and Shipped | • Sperm count and motility  
• Vitality test (Eosin Nigrosin)  
• Hypo-osmotic swelling (HOS) test  
• Sperm cryopreservation  
<table>
<thead>
<tr>
<th>BENCH PROJECTS TOPICS BY YEAR</th>
<th>MAIN TECHNIQUES INVOLVED</th>
<th>RESULTING PUBLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2013</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1. Cryoprotective Effect of Lycopene on Human Spermatozoa Following Exogenously Induced Oxidative Stress and DNA Damage – An In Vitro Study | - Sperm count and motility  
- Vitality test (Eosin Nigrosin)  
- Hypo-osmotic swelling (HOS) test  
- DNA damage by TUNEL test  
- Sperm cryopreservation | -                                                                                      |
| 2. Antioxidant and Cryoprotective Effects of Lycopene on Human Sperm Following Cryopreservation and Induction of Oxidative Stress | - Sperm count and motility  
- Vitality test (Eosin Nigrosin)  
- Sperm morphology  
- Sperm preparation by swim up  
- Sperm cryopreservation  
- MDA test  
- Mitochondrial membrane integrity test | -                                                                                      |
| 3. Validation of Five Major Proteins in Immature and Mature Human Sperm by Western Blot | - Vitality test (Eosin Nigrosin)  
- Sperm morphology  
- Sperm preparation by triple density gradient  
- Western Blot | -                                                                                      |
| 4. A Controlled Trial to Assess the Efficacy of Freezing Protocols in Preserving Sperm Function and DNA integrity in normozoospermic and oligoasthenozoospermic samples | - Vitality test (Eosin Nigrosin)  
- Sperm morphology  
- TUNEL test  