**Table S1** Buffers for immotile and motile sperm*a*

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|  | IM (immotile) White *et al*., 2007 | ISW (immotile) This work*b* | ASW (motile) This work |
| pH | 6 | 6 | 8 |
| Tris–HCl (pKa 8.3) | 20 | 0 | 0 |
| MES (pKa 6.1) | 0 | 5 | 0 |
| HEPES (pKa 3.0 and 7.5) | 0 | 0 | 10 |
| CaCl2 | 0 | 10 | 10 |
| NaCl | 300 | 486 | 486 |
| K-acetate (pKa 4.75) | 150 | 0 | 0 |
| KCl | 0 | 50 | 10 |
| MgCl2 | 0 | 26 | 26 |
| MgSO4 | 25 | 30 | 30 |
| DTT | 1 | 0 | 0 |
| NaHCO3 | 0 | 2.5 | 2.5 |
| EDTA | 0 | 0.1 | 0.1 |

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*a*Concentrations in mM.

*b*Based on **Bracho GE, Fritch JJ and Tash JS** (1997). A method for preparation, storage, and activation of large populations of immotile sea urchin sperm. *Biochem Biophys Res Commun* **237**, 59–62.

**White D, de Lamirande E and Gagnon C** (2007). Protein kinase C is an important signaling mediator associated with motility of intact sea urchin spermatozoa. *J Exp Biol* **210**, 4053–64.