

## Steven S. Potter, PhD

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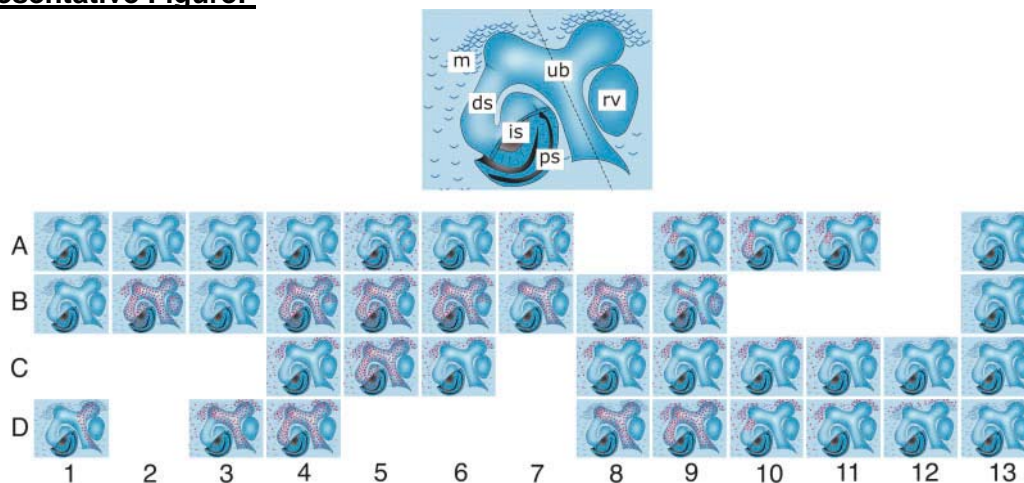
### Description of Research:

In addition to his role as Director of the Gene Expression and Sequence Core, Dr. Potter carries his own research program focused on kidney development and works collaboratively with investigators of the DHC studying intestinal organogenesis. His overall research strategy investigates the genetic pathways that drive organogenesis, with particular interest in genes that occupy upper level positions in the genetic hierarchy of development. Among these are the Hox genes, dispersed homeobox genes, zinc finger transcription factors, and other transcription factor genes, as well as growth factors and their signal transduction pathways. He has generated targeted mice with mutations in *Hoxa 11*, *Gsh-1*, *Gsh-2*, *c-myb*, *Sp4*, *Sp8*, *Lhx4*, *Pygl*, *PygII*, *LRD*, *Prx1*, and *Npas3* and studied the resulting developmental defects. He also uses microarrays to define downstream targets of transcription factors, to provide a global analysis of mutant phenotypes, and to create an atlas of normal gene expression states during organogenesis.

### Collaborations:

Dr. Potter has used the **Bioinformatics and Microarray Cores** in collaboration with Drs. Aronow, Bates, and Wiginton to study the transcriptome of the developing kidney. Additionally Drs. Potter and Wiginton are examining pygopus gene expression in intestine and intestinal epithelial cell lines, and he collaborates with Dr. Bates in studies assessing the regulation of *Hlx* gene expression and downstream targets of the *Hlx* transcription factor in digestive system development.

### Representative Figure:



Summary of Hox gene expression patterns in the developing kidney. Diagram depicts expression for each of the Hox genes arranged into clusters A-D and paralogous groups 1-13. The central T-shaped structure represents the ureteric bud (ub). The right side of each panel depicts earlier developmental structures with a renal vesicle (rv). The left side depicts later stages when the ureteric bud (ub) is connected to the S-shaped body. The S-shaped body consists of the distal segment (ds), the intermediate segment (is), and the proximal segment (ps). Mesenchyme (m) is shown surrounding the epithelial structures. Red dots represent areas of expression. Panels are included for all Hox genes, including those without detectable expression (no red dots) and those with diffuse expression (evenly distributed dots). Fig. 3 from *Dev Dvn.* 2004: 229:771-779.