

AAO Foundation Award Final Report

Principal Investigator	Rob van den Berg, DDS, MS
Co-Investigator	
Secondary Investigators	
Award Type	Fellowship
Project Title	The Temporal and Spatial Expression Patterns of the Syndecan Switching During Mouse Mandibular Morphogenesis
Project Year	1994
Institution	University of California at San Francisco
Summary/Abstract (250 word maximum)	<p>Syndecan-1 and syndecan-4 display spatial and temporal patterning during the embryonic development of the mouse first branchial arch. Distinctive patterns were observed during the fusion of the facial processes, and during palatal shelf formation and elevation. Before the fusion of the right and left mandibular process the expression of Syndecan-4 and fibronectin are high in the midline mesenchyme, and syndecan-1 expression is high in the epithelial layer. Syndecan-4 and fibronectin remain present during the active fusion stage, but epithelial Syndecan-1 expression is lost. This pattern is also observed during fusion of the elevated palatal shelves. On the contrary, during active lateral fusion of the maxillary and mandibular processes syndecan-1 expression is maintained in the epithelium, with expression of syndecan-4 in the underlying mesenchyme only. These various fusion events appear to have a distinct pattern of syndecan expression.</p> <p>During palatal shelf formation and elevation, Syndecan-4 is present in the lateral aspect of the palatal shelf epithelium. This is suggestive of a strut function during the actual elevation process, which is compatible with the ability of syndecans to associate with the actin cytoskeleton.</p>

	<p>The observed patterns are suggestive of functional involvement with these morphological events, however their exact nature still needs to be elucidated.</p>
<p>Were the original, specific aims of the proposal realized?</p>	<p>Yes. The aims were to visualize syndecan expressions during mouse mandibular development. Histological preparations at various stages of development were prepared and photographed with fluorescence techniques. The resulting images were analyzed for changes in the syndecan expression patterns.</p>
<p>Were the results published? If not, are there plans to publish? If not, why not?</p>	<p>The results were printed as my Master's Thesis, which is on deposit with the University of California, San Francisco library. As such it is accessible for other scientists for review. There has been no publication in a peer-reviewed journal, because such a publication typically requires a more complete story of scientific discovery, rather than a small component of a much larger process.</p>
<p>Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?</p>	<p>Yes. The results have been presented. Initially as part of the Oral Surgery Grand Rounds lecture series in 1996, and again at the UCSF orthodontic Graduation Ceremony in 1996.</p>