

**AAO Foundation Award Final Report**  
**(a/o 2/12/08)**

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| Principal Investigator                 | Louis A. Norton   |
| Co-Investigator                        |   |
| Secondary Investigators                | Edward F. Rossomando  |
| Award Type                             | Biomedical Research   |
| Project Title                          | The use of Immunobead Technology in the Diagnosis and Tracking of Root Resorption   |
| Project Year                           | 1997  |
| Institution                            | University of Connecticut   |
| Summary/Abstract<br>(250 word maximum) | <p>The use of an immunomagnetic method for capture and retrieval of TNF from the gingival crevice was refined and tested in a human population. In brief, paramagnetic beads (M-450) were coated with mouse antihuman TNF monoclonal antibodies were obtained from Dynal, Inc., Lake Success, New York and the antibody was attached to the beads. For testing molar teeth were selected, isolated with cotton rolls and given a gentle supragingival dental prophylaxis followed by a 30 sec. Wash. This was followed by drying with an air syringe to minimize saliva, plaque, and pellicle contamination. A 20 slurry of <math>1 \times 10^6</math> paramagnetic beads, coated with mouse anti-human TNF monoclonal antibodies, was delivered into the sulcus at the free gingival margin using a polypropylene - tipped calibrated delivery system. Immuno-beads were retrieved with a magnetic harvester by inserting the tip into the sulcus and applying a sweeping motion along the neck of the tooth extending to the embrasure space of the adjacent tooth. The magnetic harvester tip was demagnetized between bead retrieval to enhance the recovery and release of beads harvested. When the recovery of beads was less than 4%, the sample was discarded. The bead-bound TNF was analyzed by enzyme-linked immunosorbent assay (ELISA) that uses reagents provided in a commercially available kit (PREDICTA Tumor Necrosis Factor Kit, Genzyme Diagnostics, Cambridge, MA, and USA). TNF<math>\alpha</math> can be directly measured in gingival crevices by using magnetic microspheres coated with TNF antibodies. The bead-bound TNF was quantified using an enzyme-linked immunosorbent assay (ELISA) and expressed as picograms (pg).</p> |

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| Were the original, specific aims of the proposal realized?  | Yes   |
| Were the results published? If not, are there plans to publish? If not, why not?  | Yes   |
| 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><b>Publication in a refereed journal:</b></p> <p>Urles, S.D., Chrzan, J.M., Norton, L.A., and Rossomando, E.R., The Role of TNF in Bone Resorption during Eruption of Deciduous Molars in Humans, <u>AJODO</u>, 118, 196-202, 2000.</p> <p><b>Published abstracts and /or meeting presentations:</b></p> <p>Norton, Louis A., Rossomando E. F. and Urles, S. D., TNF in Root Resorption in Primary Molars, AAOF Web Site Abstr. 1996 award.</p> <p>Norton, Louis A., Rossomando E. F., The use of Immunobead Technology in the Diagnosis and Tracking of Root Reorption, AAOF Web Site Abstr.1997 award.</p> <p>Chiou, J.L., Noxon, S., Lenk, J., Rossomando, E.F. and Norton, L.A.: TNF-alpha in</p> <p style="padding-left: 40px;">gingival sulcus fluid before and after application of force to deciduous molars. University of Connecticut Health Center Student Research Symposium, Farmington, Ct, February, 1997.</p> <p>Chrzan, J.M., Ureles, S.D., Hesla, M.A., Norton, L.A., and Rossomando, E.F.,</p> <p style="padding-left: 40px;">Correlations between TNF-<math>\alpha</math> levels and primary tooth eruption.</p> |

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|  | <p>University of Connecticut Health Center Student Research Symposium, Farmington, Ct, February, 1998.</p> <p>Urles, S.D., Chrzan, J.M., Helsa, M.A., Norton, L.A., and Rossomando<br/> Comparing Cytokine TNF levels in normal and Ankylosed Deciduous<br/> Teeth. American Academy of Pediatric Dentistry meeting, research<br/> program, San Diego, CA, May 1998.</p> <p>Urles, S.D., Chrzan, J.M., Helsa, M.A., Norton, L.A., and Rossomando<br/> Crevicular TNF and primary Tooth Eruption in Humans. IADR, Nice,<br/> France, May, 1998.</p> |
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