

**MAMMALIAN TEETH SUCCESSFULLY REGENERATED**

**C**omplete tooth structures have been regenerated successfully, according to an article in the October issue of the *Journal of Dental Research*.

Researchers at The Forsyth Institute in Boston took cells from immature teeth of six-month-old pigs. They seeded the cells on biodegradable polymer scaffolds and placed them in rat hosts. At 30 weeks, small recognizable tooth crowns had formed. These tooth structures contained dentin, odontoblasts, a pulp chamber, putative Hertwig's root sheath epithelia, putative cementoblasts and a morphologically correct enamel organ containing fully formed enamel.

Earlier research had used other approaches to form partial tooth structures including dentin and pulp, but none had completed structures that included enamel.

The study results also suggest the existence of dental stem cells, which could be the key to bioengineering human teeth. "The ability to identify, isolate and propagate dental stem cells to use in biological replacement tooth therapy has the potential to revolutionize dentistry," said Dr. Dominick P. DePaola, president and chief executive officer of The Forsyth Institute.

**POTATO STARCH STOPS BLEEDING**

**A** potato-based powder can clot blood instantly, reported researchers at the American Society of Anesthesiologists annual meeting in October.

This U.S. Food and Drug Administration–approved hemostat agent produces immediate

coagulation at the surface of a wound, followed by normal blood-clotting processes. The agent is made of purified potato starch processed to create porous, spherical microparticles.

The hemostat agent is applied as a fine topical powder through a small, bellows-like reservoir. It acts as a dehydrating "sponge" when applied to the bleeding source, soaking up water and blood plasma. The large surface area of the particles gives the hemostat its dehydrating action, while the small size of the microparticles allows the body's enzymes to rapidly degrade it. According to laboratory findings, almost all traces of the substance disappear within hours.

A study of 30 volunteers at the Mayo Clinic in Rochester, Minn., found that the potato powder along with applied pressure produced instantaneous homeostasis of small forearm incisions in 77 percent of the cases, compared with a median bleeding time of approximately six minutes at control sites.

Researchers say another benefit of this powder is that it does not cause allergic reactions, which collagen-based and animal-derived hemostats do in some patients. "Of the many topical hemostats developed over the past 40 years, none has had as small a side effect profile as this one," said lead researcher Mark H. Ereth, M.D.

**DURATION OF PACIFIER USE, THUMB SUCKING MAY AFFECT DENTAL ARCHES**

**P**acifier use and thumb sucking after age two years can cause dental problems in preschool-aged children, according to researchers at the University

of Iowa.

Researchers studied 372 children longitudinally from birth using parent-answered questionnaires. They obtained alginate impressions and wax bite registrations from the children at 4 to 5 years of age and assessed the subjects for posterior crossbites, anterior open bites and overjets. They also measured dental arch parameters—width, length and depth—directly from the impressions and registrations.

They then grouped the subjects according to type of habit (pacifier or digit sucking) and duration of nonnutritive sucking habits. Subjects with durations of less than 12 months were grouped further according to the duration for which they were breast-fed. Researchers compared the dental arch and occlusal characteristics among the habit and duration groups.

In the April issue of the *American Journal of Orthodontics and Dentofacial Orthopedics*, researchers reported that they found no relationship between the duration of breast-feeding during the first year of life and any dental arch or occlusion parameters. They did find that prolonged pacifier use habits resulted in changes to the dental arches, and occlusal parameters in children who used pacifiers were different from those in children who sucked their fingers or thumbs. They also found that some changes in the dental arch parameters and occlusal characteristics (prevalence of posterior crossbite and increased amount of overjet) persisted well beyond the cessation of pacifier use or digit sucking.

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