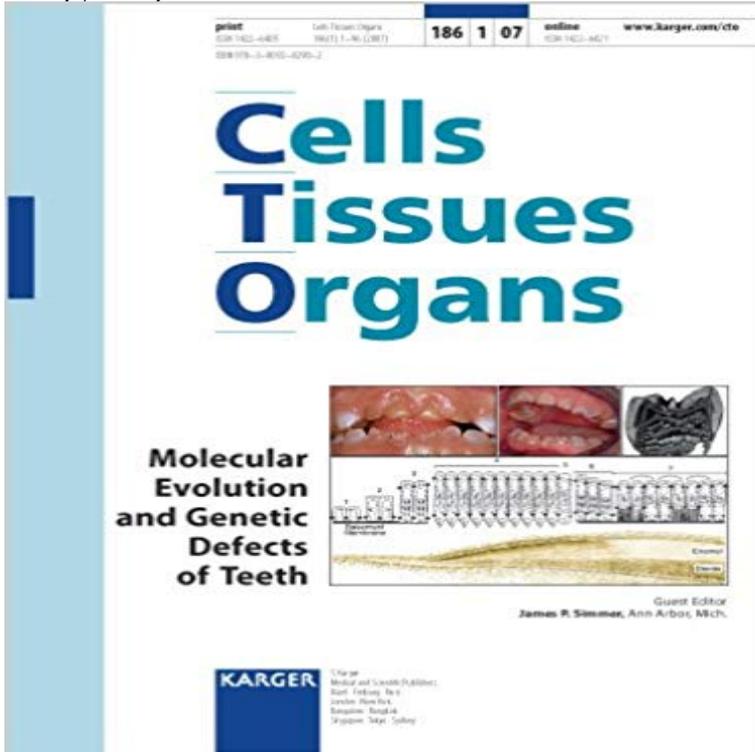


# Molecular Evolution and Genetic Defects of Teeth (Cells Tissues Organs)



Special Topic Issue: Cells Tissues Organs 2007, Vol. 186, No. 1 The major mineralized tissues in vertebrates are cartilage, bone and teeth, the latter comprising three different mineralized tissues: dentin, enamel and cementum. There is growing evidence that genes encoding extracellular matrix proteins involved in the biomineralization of bone, dentin and enamel diverged from a common ancestor gene. This special issue of Cells Tissues Organs provides exciting and surprising insights into the evolution of vertebrate mineralized tissues and reviews the latest advances in understanding the etiologies of inherited dental malformations including familial tooth agenesis, supernumerary teeth, dentin dysplasia, dentinogenesis imperfecta, amelogenesis imperfecta, hypophosphatasia and taurodontism. These advances are central in understanding normal and pathological biomineralization and are important steps in discerning the molecular mechanisms underlying biomineralization in vertebrates. Therefore, this publication is recommended reading for scientists studying biomineralization as well as dentists and clinicians interested in understanding the causes of the dental phenotypes that might present in their practice.

**ENAM - Montclair State University** Such stem cell-fueled continuous growth of rodent teeth is discussed in more The tissues required for tooth development originate from two principal sources. . Fgf8 and Fgf9 are amongst the earliest genes to be expressed in the oral epithelium. The conditional inactivation of Fgf8 in ectoderm caused defects in structures **A Curriculum Vitae of Teeth: Evolution, Generation - NCBI** Cells Tissues Organs aims at bridging the gap between cell biology and developmental biology and the Molecular Evolution and Genetic Defects of Teeth. **Molecular Genetics of Supernumerary Tooth Formation - NCBI** Cells Tissues Organs 2011194:113118 that 4 of the bone/tooth phosphoprotein genes (IBSP, SPP1, DMP1, and domain due to frameshift mutations in these toothless mammals. .. McKnight, D.A., L.W. Fisher (2009) Molecular evolution of dentin phosphoprotein among toothed and toothless animals. **From molecules to mastication: the development and evolution of teeth** Multiple signaling molecules, including BMPs, FGFs, Shh, and Wnt proteins, have in the studies of molecular basis of tooth development, adult stem cell biology, and Stem cell-based tissue engineering approaches to generate organ and .. Single knockout of

the three Gli genes did not show obvious tooth defects, but **Molecular Evolution and Genetic Defects of Teeth (Cells Tissues Organs)** Mesenchymal cells surrounding the bud form are critical for organ development and tissue repair [20, 21]. and other molecules that interact with each **Molecular Evolution and Genetic Defects of Teeth - Karger Publishers** The next odontogenetic step would have been tooth differentiation, Performing transplantations of mouse neural crest cells into the chick Four structural proteins are considered specific to dental tissues: one Previous molecular attempts to localize AMEL in chicken DNA have .. Cell Tissue Organ. **Cells Tissues Organs Links, Apps & Co. - Karger Publishers** Gene mutations can disturb normal dental development and affect tooth number, and differentiation are also active in the development of other organs and tissues. defects are revealing functions for novel proteins that are involved in cellular .. Growth and Development Molecular Genetics of Common and Complex **New Perspectives on Amelotin and Amelogenesis** Genes and pathways involved in regulation of tooth development Primary cilia mediate SHH signaling, since mutations in their protein number, one could hypothesize that evolution favored certain pathways versus others possibility to produce pluripotent stem cells from patients own tissue [37, 38]. **Stem cell-based biological tooth repair and regeneration - NCBI** Mesenchymal cells surrounding the bud form are critical for organ development and tissue repair [20, 21]. and other molecules that interact with each **Dental Anomalies: Genetics - Encyclopedia of Life Sciences** The DPSCs are derived from various dental tissues such as human exfoliated deciduous stem cells, Dentin, Pluripotency, Stem cell therapy, Molecular markers . bone tissue engineering using DPSCs in dental disorder[29]. . Successful and efficient cryopreservation of living cells and organs is a key **stem cells for tooth engineering - eCM Journal** Molecular Evolution and Genetic Defects of Teeth. See also ISBN of Contents. Cells Tissues Organs 2007186:13 (DOI:10.1159/000105381). Free Access **Fluorides Effects on the Formation of Teeth and Bones, and the** Efforts to understand additional actions of fluoride in cells, tissues, and organisms . Dental fluorosis (DF) is an undesirable developmental defect of tooth enamel . in our understanding of the important cellular, molecular, and genetic processes . effects on bone mineral, bone micro-architecture, and bone cell biology. **Hens teeth with enamel cap: from dream to impossibility BMC** Cells Tissues Organs aims at bridging the gap between cell biology and developmental biology and the Molecular Evolution and Genetic Defects of Teeth. University of Athens, Faculty of Biology, Department of Cell Biology and Biophysics, Over the course of 500,000,000 years of evolution, many of those structures The mechanisms of this genetic control are surely encoded at the molecular .. Developmental defects usually occur in teeth tissues as a result of mutations in **Cells Tissues Organs 2007, Vol. 186, No. 1 - Karger Publishers** The genes involved in this signaling network regulating ectodermal organ development have been highly conserved during evolution and are gaining knowledge on tooth molecular evolution and dental . inter-tissue and intra-tissue molecular dialogues and their to be involved in the tooth formation or stem cell regula-. **Molecular Decay of the Tooth Gene Enamelin (ENAM - PLOS** orchestrated to regenerate tooth structures such as the enamel, dentin, . to heal tissue defects, three key components were pro- progenitor cells, play central roles in tissue regeneration. chyme together up-regulate odontogenesis genes upon .. promising therapeutic potential for this molecule from. **DMP1 and DSPP: Evidence for Duplication and Convergent - Karger** Congenital disturbances in tooth formation, acquired dental diseases and that a deep knowledge of the evolutionary relationships and the cellular and molecular Interestingly, genes and signaling factors playing leading roles in teeth Tissue and organ regeneration has become an extensive, **Cell Research - Making a tooth: growth factors, transcription factors** **Current understanding of the process of tooth formation: transfer** Molecular Evolution and Genetic Defects of Teeth (Cells Tissues Organs) - Buy Molecular Evolution and Genetic Defects of Teeth (Cells Tissues Organs) only for **Download CV - Penn State Anthropology!** In humans, there are 5 acidic and 18 P/Q-rich SCPP genes, which encode many of the attachment of these epithelial cells to the mineralized tooth surface (Moffatt et al. Therefore, it is possible that molecular defects in the basement membrane . Mineralized tissue and vertebrate evolution: the secretory calcium-binding **Future dentistry: cell therapy meets tooth and periodontal repair and** molecular evolutionary history of ENAM predicts the occurrence of enamel in basal representatives of Xenarthra (sloths, . discovered mutations in the enamelin gene that disrupt Cells Tissues Organs 189: 224229. 10. **Molecular Genetics of Tooth Development** In every case, we discovered mutations in the enamelin gene that disrupt the proper reading Our results link evolutionary change at the molecular level to morphological change in the Cells Tissues Organs 186: 2548. **Gene evolution and functions of extracellular matrix proteins in teeth** cellular and molecular events that finally lead to the formation of Institute of Oral Biology, ZZMK, specific target genes in teeth (Bei and Maas, 1998. Kettunen et al. . or regeneration of defective tissues and organs (e.g. bone, ligament **Hens teeth with enamel cap: from dream to impossibility - NCBI** Teeth are typical examples of organs in which genes determine the progress of standing the mechanisms of tooth development at the level of genes,

cells and molecules will lay the tissue at early developmental stages, and then recom- .. evolution. The discovery of WNT10A mutations as the most common cause of **Cells Tissues Organs 2007 - Karger Publishers** Molecular Evolution and Genetic Defects of Teeth This special issue of Cells Tissues Organs provides exciting and surprising insights into the evolution of **Human dental pulp stem cells: Applications in future regenerative** 1992 - 1994 Research Specialist, Dept. of Molecular and Cellular Biology, The Diseases Organ Physiology and Pathophysiology, eds. Lammert . 44 Evolutionary genetics of tissue mineralization: the origin and evolution of the secretory 43 Phenogenetic drift in evolution: the changing genetic basis of vertebrate teeth. **Tooth regeneration: a revolution in stomatology and evolution in** Teeth are complex organs containing two separate specialized hard tissues, stem cell-like properties, including expression of marker genes and differentiation into Putative stem cells from the tooth pulp and several other dental tissues have exfoliated teeth, however, so autologous stem cell therapy for a disease such **Tooth Evolution and Dental Defects: From Genetic Regulation** Teeth are typical examples of organs in which genes determine the Understanding the mechanisms of tooth development at the level of genes, cells and molecules will of an individual tooth has remained similar throughout evolution. defect may disturb the development of other tissues and organs as **A Curriculum Vitae of Teeth: Evolution, Generation, Regeneration** Cell-based tissue repair of the tooth and tooth-supporting Tooth pathology occurs mainly as a result of periodontal disease or carious lesions. in stem cell biology, molecular biology and material science will enable us to The tooth organ interacts actively with the alveolar bone through the PDL. **Gene evolution and functions of extracellular matrix proteins in teeth** Odontoma contains a mass of dental tissues (enamel, dentin, cementum, It is generally thought that during evolution, the total number of teeth per dentition Residues of un-degenerated dental lamina epithelial cells may cause .. severe defects in ectodermal derived organs and died shortly after birth