

The University of Bergen School of Dentistry 1962–1987

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History

The University of Bergen School of Dentistry admitted its first class of students in September 1962. The inauguration ceremony took place on 25 April 1963, in the presence of government, city, and university officials and representatives of many European sister institutions.

The idea of a dental school in Bergen originated within the Bergen Dental Society already in 1919, to alleviate the shortage of dentists in Norway at the time, but was subsequently shelved as the existing institution in Oslo was expanded.

Because of interference with higher education and the internment of Norwegian students by German occupation forces during

the Second World War, Norway found itself with an acute shortage of dentists and other health personnel in 1945. Further demand for dental health personnel was created when, in 1950, the Parliament introduced a Public Oral Health Service Bill, which established a country-wide public oral health service program.

On this background, a new local initiative to establish an institution for research in and teaching of dentistry associated with the University of Bergen received broad political support. As a result, facilities were planned for a class size of 48 dental students per year (Fig. 1). In 1982 the Government determined that the supply of dentists was at the point of exceeding the demand, and the class size was reduced to 40 students.

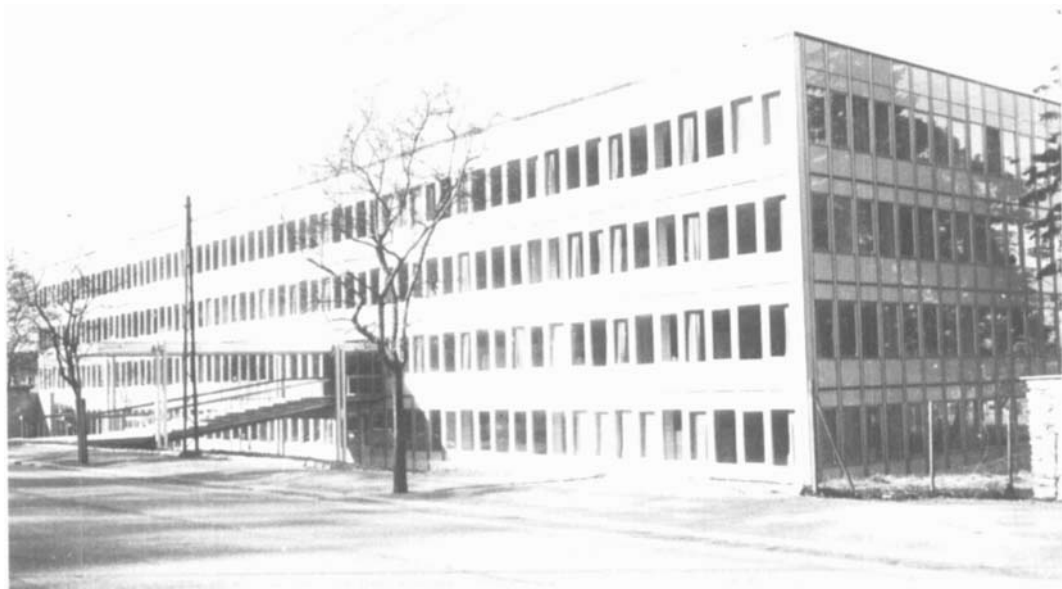


Fig. 1. University of Bergen School of Dentistry. The building at Årstadveien 17 houses clinical departments and the Department of Dental Research. Preclinical departments, Department of Dental Materials, and the School of Dental Hygiene are located in adjacent buildings.

In the period 1962–1967, students who had completed preclinical studies abroad were admitted to a 3-year clinical dental curriculum. After completion of the buildings for preclinical medical and dental sciences in 1966, the full 5-year curriculum in dentistry went into effect.

In 1978, a 2-year curriculum in dental hygiene was established, with a class size of 21 students per year.

Curriculum

The original 5-year curriculum was adopted from the curriculum then in effect at the University of Oslo, with minor adjustments dictated by the physical facilities and the need for greater emphasis on such subject areas as periodontics and microbiology.

After several years of deliberation a major revision of the curriculum was implemented in 1981. The new curriculum (Fig. 2) is based on current educational principles and incorporates new trends and concepts which have resulted in curriculum revision at other dental schools around the world as well. An important aim of the curriculum revision was to strengthen ties between preclinical and clinical subjects. Students are now prepared for early patient contact (in the third trimester) through an introductory course in oral hygiene and general oral prophylaxis. A more advanced course in oral prophylaxis is given in the 7th–9th trimester. Towards the end of the study (13th–15th trimester), teaching of oral diagnosis, treatment planning, and therapy is rounded off with a comprehensive course in total patient care. The new curriculum also defines community den-

SUBJECT	YEAR, TRIMESTER														
	1			2			3			4			5		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PHILOSOPHY	_____														
CHEMISTRY	_____														
COMMUNITY DENTISTRY	_____														
ORAL PROPHYLAXIS	_____														
ANATOMY, GENERAL	_____														
ANATOMY, ORAL	_____														
BIOCHEMISTRY	_____														
PHYSIOLOGY	_____														
DENTAL MATERIALS	_____														
CARIOLOGY	_____														
ORAL RADIOLOGY	_____														
PATHOL., GENERAL AND ORAL	_____														
ANESTHETIOLOGY	_____														
MICROBIOLOGY, IMMUNOLOGY	_____														
PHARMACOLOGY	_____														
PERIODONTICS	_____														
ORAL SURG. AND ORAL MED.	_____														
OCCCLUSION	_____														
ORTHODONTICS	_____														
PROSTHETICS, REMOVABLE	_____														
PROSTHETICS, CROWN & BRIDGE	_____														
PEDODONTICS	_____														
TOTAL PATIENT CARE	_____														
FORENSIC DENTISTRY	_____														
TEAM CLINIC, DENTAL HYGIENE	_____														
OTHER SUBJECTS	_____														

Fig. 2. Five-year curriculum in dentistry. Significant features are early patient contact; integration and concurrent teaching of preclinical, paraclinical, and clinical subjects; and emphasis on community dentistry and prophylactic approach to dental care.

Table 1. Administrative structure and staff

Department	Faculty		Non-academic staff
	Professor	Other	
Clinical			
Cariology and Endodontics	2	7.75	4.50
Community Dentistry*	1	4.50	10.00
Dental Research	1	1.00	3.00
Oral Radiology	1	2.75	5.50
Oral Surgery and Oral Medicine†	1	5.50	11.50
Orthodontics	2	5.25	8.00
Pedodontics	1	5.00	6.50
Periodontics	1	5.00	4.00
Prosthodontics	1	8.50	10.50
Dental Materials	1	2.00	1.00
Oral Health in Developing Countries‡	1	0	1.00
Preclinical			
Anatomy§	1	0	0
Biochemistry	0	0	0
Physiology	0	0	0
Paraclinical			
Microbiology§	1	1.00	1.50
Pathology§	1	1.00	1.50
Pharmacology	0	1.00	0
School administration and auxiliary personnel		3.00¶	28.83
Total	16	53.25	97.33

* Including School of Dental Hygiene.

† Not including hospital staff.

‡ Established 1986; positions not filled.

§ Section within department of the School of Medicine.

|| Under the School of Medicine.

¶ Research fellowships.

istry as a separate subject. The course in community dentistry is taught intermittently over the entire 5 years of study and consists of lectures, seminars, clinical courses, and excursions and auditing at public oral health clinics.

Another major innovation concerns the administration of teaching activities. The course is divided into three major teaching blocks, which contain subjects and elements that naturally belong together (basic science subjects; pathology and oral diagnosis; prophylaxis and therapy). Thus, unified planning and control and adequate coordination of instruction are ensured in the various subjects with regard to content and sequence. The Curriculum Committee and the three Block Committees are standing committees that monitor all educational

activities continually and suggest modifications of the curriculum to the Faculty Council as necessary.

Altogether, the undergraduate dental curriculum comprises approximately 1520 hours of laboratory and propaedeutic courses, 1205 lecture hours, and 1950 hours of clinical training. The course spans 15 trimesters, each of 13 weeks' duration. Candidates who complete this 5-year program are awarded the degree *Candidatus Odontologiae* (Cand. Odont.) and are qualified for licence to practice dentistry in Norway.

Postgraduate programs

Postgraduate courses leading to a diploma are offered in community dentistry (1-year

course), endodontics, operative dentistry, orthodontics, pedodontics, periodontics (2-year courses), and oral surgery (4-year course). A postgraduate course in prosthodontics is in the planning stage. At present, approximately 30 Norwegian and foreign students are enrolled in these programs.

Graduate programs

Candidates who have completed the Cand. Odont. degree or have an equivalent degree from a foreign university may pursue advanced studies and qualify for the degrees Licentiatius Odontologiae (Lic. Odont.) or Doctor Odontologiae (Dr. Odont.). These degrees are awarded on the basis of a published thesis.

The University of Bergen has recently, with government approval, instituted the degree Master of Philosophy (M. Phil.), which will be awarded to students from foreign countries on the basis of a 2-year program at the Master's degree level consisting of courses and a thesis.

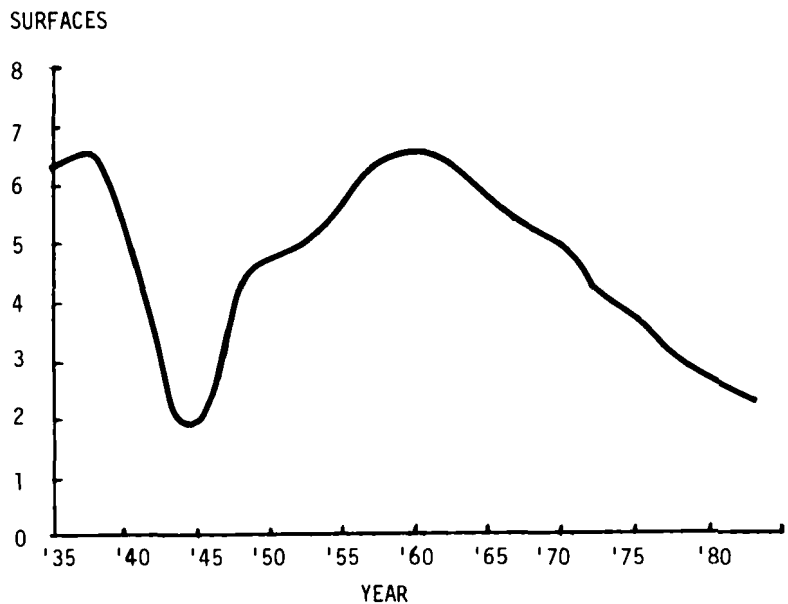
Administrative structure

The School of Dentistry is one of seven faculties within the University of Bergen (the others are Arts, Law, Mathematics and Natural Sciences, Medicine, Psychology, and Social Sciences). The Faculty Council is the governing body, chaired by the Dean (elected for a 3-year term, one term renewable), and composed of elected members from each of the affiliated departments. The Council prepares the faculty budget, nominates candidates for tenured positions, decides on curricular matters, and coordinates faculty policies and department interests.

Departmentalization within clinical odontology follows traditional dividing lines (Table 1). Also housed within the clinic building is the Department of Dental Research, which provides research facilities for the clinical departments. The faculty of each department comprises one or two full professors and various numbers of assistant professors and clinical instructors.

Teaching of preclinical (anatomy, physiology, and biochemistry) and paraclinical (microbiology, pathology, and pharmacology) subjects is provided by the appro-

Fig. 3. Average number of filled tooth surfaces per child per year in the School Dental Service in Bergen during the period 1935-1983. The recent reduction in the need for dental therapy among 7- to 14-year-old children is partly due to the preventive programs introduced in cooperation with the Institute of Pedodontics, University of Bergen, in 1962. The caries incidence is now approaching the all-time low, experienced as a consequence of restrictions on sweets and sugar consumption during World War II. Original data courtesy Dr. Gunvor Merok Olsen.



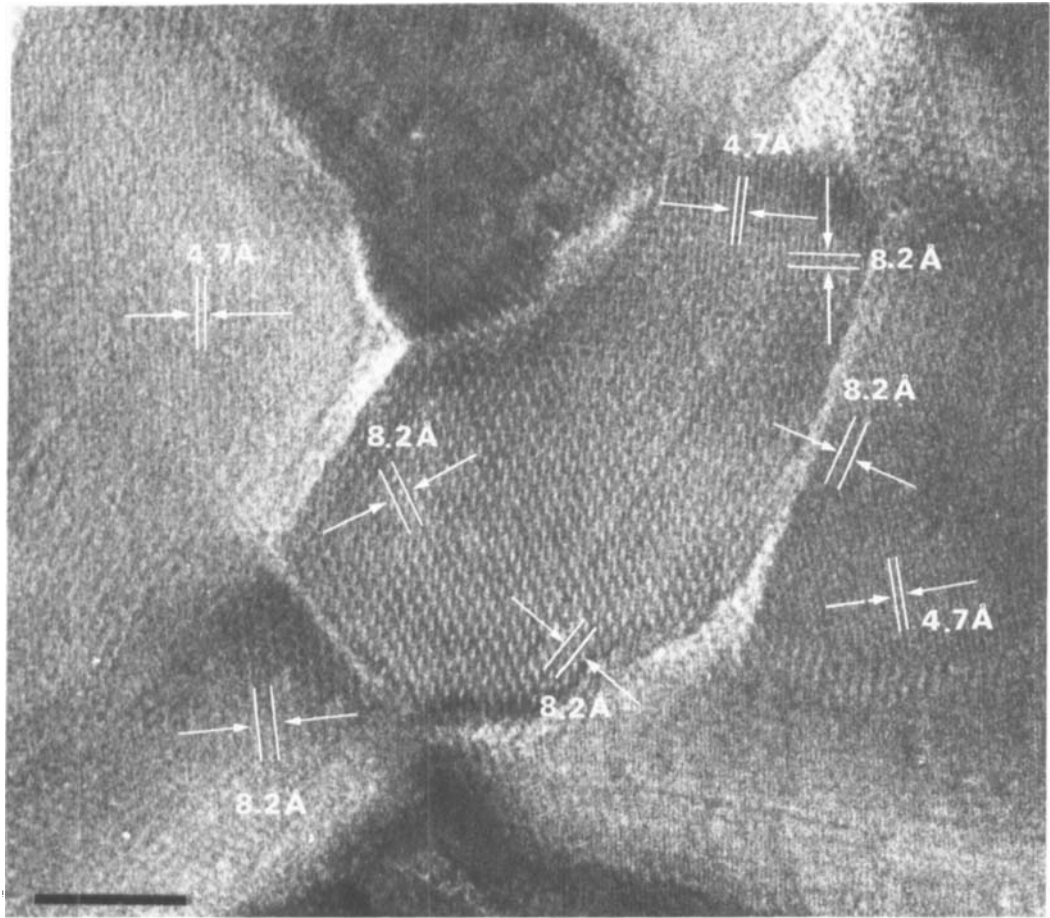


Fig. 4. The first visualization of molecular arrangement within hydroxyapatite crystals in dental enamel. Transmission electron micrograph. Magnification bar, 10 nm. (Reproduced with permission from *J Ultrastructure Res* 1972;41:369-375.)

priate departments in the School of Medicine. In some of these departments, however, a separate section administered by the School of Dentistry is responsible for teaching dental students and for the development of dental research in the discipline. The integration of preclinical and para-clinical departments with those of the School of Medicine has been of significant advantage for the development of research in oral biology and for the recruitment of dental candidates to research in these areas.

The Department of Oral Surgery incorporates the Department of Maxillo-Facial Surgery of the University Hospital. The

School of Dental Hygiene is administered by the Department of Community Dentistry, which is also responsible for the Patient Admissions Clinic. Postgraduate and continuing education activities are administered by appropriate faculty committees.

In 1986 a chair was established for the study of oral health in developing countries. It is expected that this will result in expanded research and teaching activity in this area. Cooperating intimately with the Center for Development Studies of the University of Bergen, the School of Dentistry is planning further engagements in Third-World countries.

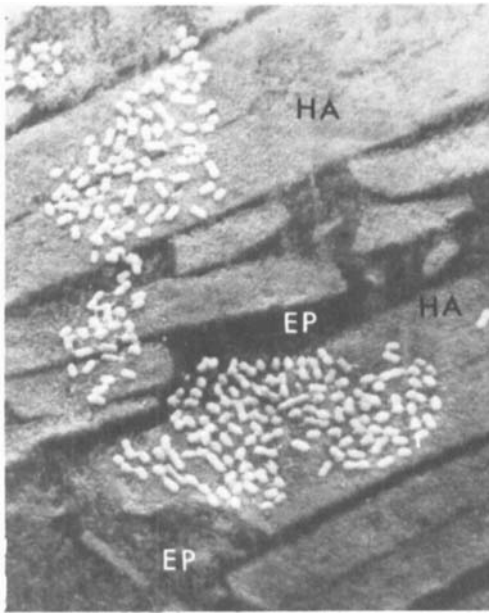


Fig. 5. Scanning electron micrograph illustrating the importance of specific surface characteristics in early pellicle and plaque formation. On a test surface of hydroxyapatite (HA) and epoxy resin (EP), which has been worn intraorally for 6 h, early organic deposits favor the hydroxyapatite surface. (Magnification, $\times 2000$.) (Reprinted with permission from *J Periodontal Res* 1977;12:73-89.)

Graduates 1962-1987

Within its first 25-year period of existence, the University of Bergen School of Dentistry has graduated approximately 1000 dentists, and 180 candidates from the School of Dental Hygiene. In addition, 29 candidates have received the degree Dr. Odont. and 24 candidates the degree Lic. Odont. The titles of their dissertations are listed in the Appendix. Almost 25% of the dentists presently practicing in Norway have graduated from the University of Bergen School of Dentistry. This output has contributed significantly to the elimination of the acute post-war shortage of dentists which existed at the beginning of this 25-year period.

Research

Although the academic staff devotes, on an

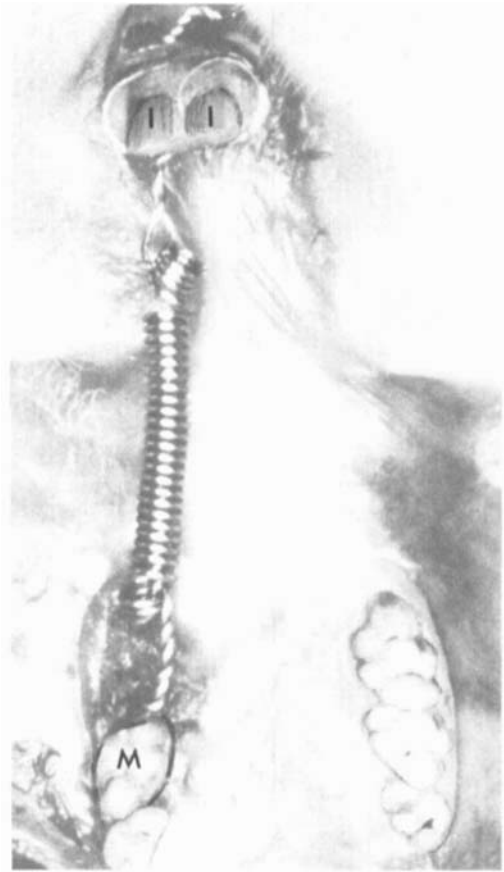


Fig. 6. Experimental studies in the rat have contributed to the understanding of tissue reactions in orthodontic therapy. In this instance, the right maxillary second molar (M) is being pulled into the extraction socket of the first molar by an appliance fixed to the two incisors (I). Courtesy Dr. Per Rygh.

average, 65% of their time to teaching and 15% to administration, a high level of research activity has been demonstrated in all departments, resulting in a total of 79 research publications in 1985. In the period 1962-1986 a proportionally large number of research projects have dealt with the pathogenesis and the microbiologic and immunologic basis of periodontal diseases. Facilitated by the relatively large number of graduate students in the discipline, orthodontic research has included clinical, cephalometric, and histologic studies related to growth and development and to tissue reactions to orthodontic therapy. Prosthodontic

research has evaluated the long-term effects of restorative therapy on abutment teeth and their supporting tissues. Mineralized tissue research has improved our understanding of the fine structure of dental enamel and dental cementum. In addition, the effects of various fluorides on mineral composition and caries progression have been examined in several in vitro and clinical experimental studies. The wide range and penetrating nature of some of the completed research projects are illustrated in Figs. 3–6 and are amply documented by the numerous dissertations produced (Appendix).

Appendix

Theses approved for the degrees *Doctor Odontologiae* and *Licentiatius Odontologiae* at the University of Bergen through 1986

Doctor Odontologiae

- Hasund A. Occlusion and facial cranium in a medieval population in Oslo and Heidal (In Norwegian). 1967.
- Selvig KA. Studies on the genesis, composition and fine structure of cementum. 1967.
- Fosse G. A quantitative analysis of the numerical density and the distributional pattern of prisms and ameloblasts in dental enamel and tooth germs. 1967.
- Silness J. Elements of the organic framework of dental enamel of the hedgehog (*Erinaceus europaeus* L.). 1968.
- Kristoffersen T. Immunochemical studies of oral fusobacteria. 1969.
- Kvinnslund S. The profile of the foetal facial skeleton. 1970.
- Ødegaard J. The skeletal profile of Norwegian children from age 4 to 10 years. 1972.
- Gustavsen F. The fine structure of dental enamel and coronal cementum of the kangaroo (*Macropus giganteus*). 1972.
- Wisth PJ. The sagittal head morphology of individuals with skeletal Angle class III malocclusions and changes subsequent to surgical treatment. 1973.
- Halse A. The mineral phase of rodent incisor enamel with special reference to the iron-containing layer. 1974.
- Rygh P. Hyalinization of the periodontal ligament incident to orthodontic tooth movement. 1974.
- Molven O. The frequency, technical standard and results of endodontic therapy. 1974.
- Hegdahl T. The mineralization of and some structural features of the carapace of the crab (*Cancer pagurus* L.). 1975.
- Skaug N. Soluble proteins in fluid from non-keratinizing jaw cysts in man. 1977.
- Sivertsen R. Sannerud's treatment routine. A longitudinal study of caries therapy ad modum Sannerud in the deciduous dentition. (In Norwegian). 1979.
- Sveen K. Biological activities of lipopolysaccharides from the anaerobic organisms *Bacteroides*, *Fusobacterium* and *Veillonella*. 1979.
- Lie T. Morphologic studies on dental plaque formation. 1979.
- Tønder KJH. Blood flow and vascular pressure in the dental pulp. 1980.
- Nilsen R. Cellular reactions and mineralization in induced heterotopic bone formation in guinea pigs. 1981.
- Tveit AB. Effects of some fluoride-containing materials and preparations on dental hard tissues with special reference to fluoride uptake. 1982.
- Janson M. Long-term effects of orthodontic treatment. A functional, cephalometric and clinical study of Angle cl. II, div. 1 malocclusion cases. 1982.
- Berg E. An exploratory study of patient satisfaction with dentures. 1983.
- Wesenberg GR. Low level cadmium exposure in rats. Tissue distribution of cadmium, and its effects on other elements and immune response. 1983.
- Berge OG. The role of serotonergic systems in descending control of nociception and in morphine analgesia. 1984.
- Raadal M. Sealing and filling with diluted composite resins in the prevention of occlusal caries in permanent first molars. 1984.
- Grevstad HJ. A study of tooth development in the rabbit (*Oryctolagus cuniculus*) with special reference to permanent incisors. 1985.
- Bjorvatn K. Antibiotics and dental hard tissues. 1985.
- Vasstrand EN. The rigid cell wall layer of *Fusobacterium nucleatum* Fevl. An enzymatic and chemical analysis. 1986.

Licentiatius Odontologiae

- Lande H. Size and position of the maxilla in Norwegian boys with complete clefts of lip and palate. 1971.
- Fredlund A. Mandibular position and configuration in Norwegian boys with cleft palate. 1971.
- Mathiesen Å. Demonstration of mast cells in the human periodonal membrane in health and disease. 1972.
- Wisth PJ. Changes of the soft tissue profile of Norwegian children from age four to ten years. 1972.
- Breistein LS. Experimental studies on the development of the trigeminal ganglion in chicken embryos. 1972.
- Halse A. Studies on rat incisor enamel with special reference to the iron-containing layer. 1972.
- Gat H. An evaluation of dental ages of Norwegian children from the Bergen area. 1972.

8. Morgner J. Longitudinal evaluation of class I and class II, division 1 treatment effects. 1973.
9. Finnbogason SY. Methods for studying the mode of action of fluorides (In Norwegian). 1981.
10. Derry AW. The influence of the anterior position of the cartilaginous nasal septum upon growth of the rat snoute. 1976.
11. Alnæs L. Heredity and craniofacial growth prediction. 1976.
12. Triratananimit P. Ideal arch configuration in the lateral segments. 1976.
13. Gasson N. Facial rotations: their relationships and their correlation with growth direction. 1976.
14. Lavergne J. Facial rotations and their influence on the morphogenesis of malocclusions. 1976.
15. Katz M. Matrix formation in the condyle of the rat. ^{35}S -sulphate incorporation studies. 1978.
16. Alvestad SA. Growth of the mandibular condylar cartilage of the rat in situ, autotransplanted and in vitro. 1979.
17. Hansen OK. Maxillary response to cervical traction. 1979.
18. Kvinnsland I. Cell proliferation, ground substance formation and collagen synthesis in the human dental pulp in vitro. 1980.
19. Bachmann J. Surgical-orthodontic treatment planning. Evaluation of analyses for soft-tissue profile changes in patients with mandibular prognathism. 1981.
20. Espelid I. Importance of the film development procedure in X-ray diagnostics (In Norwegian). 1981.
21. Bernhoft CH. Xerostomia in edentulous patients following radiation therapy of malignant tumors in the face-, jaw- and neck region. A clinical microbiological study (In Norwegian). 1982.
22. Oftedal B. Residual spaces after tooth extraction in orthodontic treatment (In Norwegian). 1982.
23. Stensland AL. Dentofacial changes in young children with negative overjet treated with a combined orthodontic and orthopedic approach. 1985.
24. Myklebust S. Instrument disinfection and hand cleansing in dental practice (In Norwegian). 1985.

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