



Board of Regents Work Session

March 2016

March 30, 2016

9:45 a.m. - 11:15 a.m.

West Committee Room, McNamara Alumni Center

BOR - MAR 2016 - Work Session

1. Raising the National Profile of the University's Academic Health Sciences

Docket Item Summary - Page 3

Presentation - Page 5



BOARD OF REGENTS DOCKET ITEM SUMMARY

Board of Regents Work Session

March 30, 2016

AGENDA ITEM: Raising the National Profile of the University's Academic Health Sciences

Review Review + Action Action Discussion

This is a report required by Board policy.

PRESENTERS: Brooks Jackson, Vice President for Academic Health Sciences and Dean, Medical School
Trevor Ames, Dean, College of Veterinary Medicine
Leon Assael, Dean, School of Dentistry
Connie Delaney, Dean, School of Nursing
John Finnegan, Dean, School of Public Health
Marilyn Speedie, Dean, College of Pharmacy

PURPOSE & KEY POINTS

The purpose of this item is to discuss key highlights and strategic priorities for each of the schools in the Academic Health Center (AHC), with an emphasis on how a comprehensive academic health sciences program increases national competitiveness. This discussion will also include an update on planning efforts to develop a grand challenges research and training program focused on aging.

Strategic Policy Questions

- How can the University build on its current strengths and further enhance its national and international stature in health research?
- How do we determine strategic investments in research infrastructure, signature programs, and clinical research?
- How do we retain and attract talented researchers?
- How can the University meet the growing and rapidly changing health professional workforce needs in Minnesota?
- What strategic investments are needed to enhance inter-professional education?
- How do we address the growing debt levels of health professional students?
- How does the growing competitiveness of our schools impact enrollment?
- How do we leverage existing resources most effectively to impact the challenges of a growing aging population on families, communities and the state?

BACKGROUND INFORMATION

The Board has participated in the following discussions about the academic health sciences:

- Medical School Update – Academic & Student Affairs Committee, February 2016
- Academic Health Center Research: Overview & Update – Special Committee on Academic Medicine, May 2014
- Educating & Training Minnesota’s Health Workforce – Special Committee on Academic Medicine, December 2013
- Clinical Services & Operations – Special Committee on Academic Medicine, October 2013

Board of Regents Work Session

Raising the National Profile of the
University's Academic Health Sciences
March 30, 2016



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

Academic Health Center

Innovative expertise in education and research leading to better health and vital economy in Minnesota.

Academic Health Center

Meeting Expectations:

<p>70% of all health professionals working in Minnesota trained at the University</p>	<p>Leading work in</p> <ul style="list-style-type: none"> • diabetes • infectious diseases • neuroscience • cancer • cardiovascular research 	<ul style="list-style-type: none"> • Global impact in prevention and health improvement • 970,000 human and animal patient visits • 1,700 educational rotations in Minnesota
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Through our:

Schools and Colleges	Centers and Institutes	Clinics and Hospitals
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In Disciplines of:

Dentistry	Medicine	Nursing	Pharmacy	Public Health	Veterinary Medicine
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Driving Initiatives in:

Education	Research	Clinical/Outreach
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AHC Strategic Directions

- **Increasing the Impact of Research on Health**
 - Identify specific roles of AHC schools/colleges and leverage the competitive advance of six schools working together.
 - Maintain and enhance national prominence in priority areas
 - Ensure our priorities are aligned with Minnesotans



AHC Strategic Directions

- **Innovation in Education to Enhance the Health Workforce**
 - Promote the value and role of interprofessional health education
 - Meet evolving health workforce needs through innovative care models
 - Promote the scholarship of education across the AHC
 - Transform the learning environment



Today's Presentation

- Update from College of Pharmacy, School of Nursing, School of Dentistry, College of Veterinary Medicine, School of Public Health
- Update on AHC-wide Grand Challenge on Aging
- Discussion



College of Pharmacy: Why We Are #2



- Ranked #2 by *U.S. News & World Report* (out of 135 pharmacy schools)
- “College of Pharmacy is strong in all three missions” – ACPE
- Innovative education across two campuses
- Emphasis on rural and underserved populations
- Interprofessional education is easier to do within a comprehensive AHC
- Collaborative practices



Why We Are #2

- Research strengths:
 - Drug discovery and development – cancer, Alzheimer's, epilepsy, glaucoma, vaccines
 - Drug Delivery, e.g., crossing the blood-brain barrier, nanomedicines
 - Personalized/Precision medicine
 - Health equity – Native Americans, Hispanics, African Americans, Hmong, rural populations
 - Outcomes of new models of practice
 - Pharmacoeconomics



Why We Are #2

- National leadership – Alumni, faculty, preceptors, students
- Practice environment in Minnesota
 - All graduates get well-paying jobs that use their talents and skills
 - Pharmacy practice is exceptional thanks to our practitioners being trained with other professionals

Why not #1?

- UNC Eschelman School of Pharmacy is #1
 - \$35M building and \$100M innovation fund



Challenges

- Low salaries lead to retentions and inequities, some losses

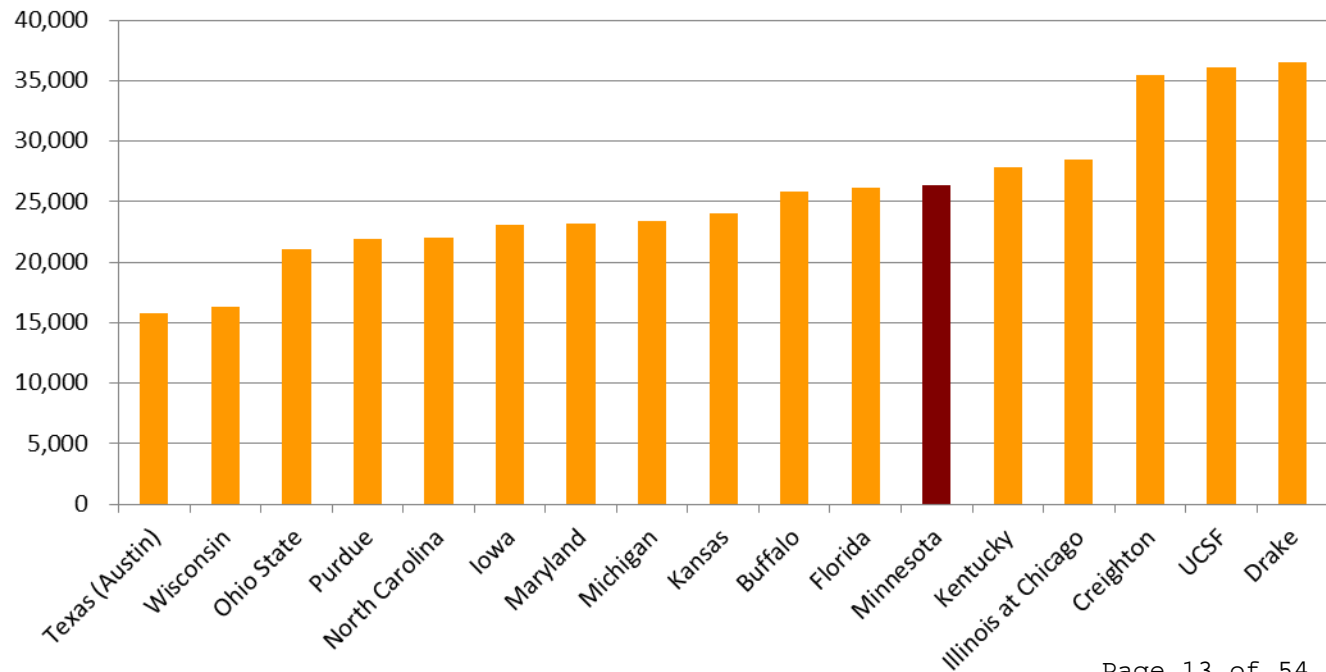
Where CoP lands among Big 10 median salaries:

Professor = 9th (same as last year)

Associate = 8th (down from 7th last year)

Assistant = 8th (same as last year)

- High tuition



Challenges

- Enrollment
 - Low application numbers nationally
 - CoP: 440 applications for 168 seats
 - Still able to fill class with high quality students
 - Incoming class: 3.53 average GPA
- Finances
 - Cost pool increases
 - State funding decreases
 - Tuition as percent of revenue is increasing
- “Discovery Teams” are only for Med School



Senior Care Pharmacy Facts

- Seniors represent just over 13% of the population, but consume 40% of prescription drugs and 35% of all over-the-counter drugs
- On average per year:
 - People 65-69 years old take 14 prescriptions
 - People 80-84 years old take 18 prescriptions
- 15%-25% of drug use in seniors is considered unnecessary or otherwise inappropriate
- Adverse drug reactions and noncompliance are responsible for 28% of hospitalizations in the elderly
- 36% of all reported adverse drug reactions involve an elderly individual
- Each year, 32,000 seniors suffer hip fractures caused by medication-related problems



Aging Grand Challenge Initiative

CoP goal: Leverage existing small cohort of faculty focused on geriatrics by hiring 2 additional faculty to:

- Coordinate and focus efforts on an expanded IPE program to prepare students and existing pharmacists for the “Certification in Geriatric Pharmacy” exam
- Sponsor annual conferences for all health professionals on the optimal use of medications in the elderly
- Expand research:
 - in chronic disease prevention and treatment (Alzheimer’s, Parkinson’s, Epilepsy)
 - to reduce medication related adverse events in the elderly
 - to utilize databases to identify and intervene with suboptimal prescribing in geriatric patients
 - to develop practices focused on the transitions of care
 - to identify ways to improve the medication experience for individual patients



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School of Nursing



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School of Nursing
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Nursing

protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and populations.

School of Nursing Vision

a world where nurses lead collaborative efforts to attain optimal health for all people

School of Nursing Mission

to generate knowledge and prepare nurse leaders who create, lead and participate in holistic efforts to improve the health of all people within the context of their environments.



School of Nursing

Health Promotion among Vulnerable Populations

Prevention and Management of Chronic Health Conditions

Symptom Management

Health/Nursing Informatics and Systems Innovation



Care Continuum:

Home, School, Primary Care, Acute Care, Long Term Care



Life Span Health – Vulnerable Populations

Children, Adolescents & Families, Immigrants/Refugees, Aging Adults



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Research Making a Difference

New technology is aimed at keeping dementia, Alzheimer's patients at home Star Tribune – Dec. 2015

School of Nursing joins United Health Group - Optum Labs as inaugural partner Star Tribune – Feb. 2014

Does it count as a family dinner if it's over in eight minutes? Wall Street Journal Sept. 2013

Why solitude is bad for your health Star Tribune – Oct. 15, 2013

Program Increases Teen Contraceptive Use Center for Disease Control web news –May 2013.



M Health

Nursing Collaboratory

- Infrastructure for Fairview Health Services, UM SoN and UMP to work together in the generation, dissemination, and application of knowledge for the improvement of nursing practice and patient outcomes
- An incubator for creativity and innovation that will engage, together, nursing faculty, nursing staff, and nursing students in the development of new products and services and models to enhance nursing education, research and practice.



National Recognition

- **Ranked 12th in nursing graduate school rankings**

(US News & World Report 2017 best graduate schools)

- **Ranked 2nd in nursing informatics**

(US News & World Report 2017 best graduate schools)

- **Ranked 4th in nurse midwifery**

(US News & World Report 2017 best graduate schools)



- **Creative, dynamic, growing, early adopters**



Academic Nursing

Advancing Healthcare Transformation

2016 Report, American Association of Colleges of Nursing



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Academic Programs

- **Bachelor of Science in Nursing (435)**
- **Master of Nursing (127)**
- **PhD in Nursing (43)**
- **Doctor of Nursing Practice (348) Largest in USA**
 - **Adult Health/Gerontological Clinical Nurse Specialist**
 - **Adult Health/Gerontological Nurse Practitioner**
 - **Family Nurse Practitioner**
 - **Health Innovation and Leadership**
 - **Integrative Health and Healing**
 - **Nurse Anesthesia**
 - **Nurse Midwifery**
 - **Nursing Informatics**
 - **Pediatric Clinical Nurse Specialist**
 - **Pediatric Nurse Practitioner**
 - **Psychiatric/Mental Health Nurse Practitioner**
 - **Public Health Nursing**
 - **Women's Health Nurse Practitioner**



Enrollment Opportunities

Nursing programs are **highly competitive**

- Bachelor of Science in Nursing (TC and Rochester Campuses) – **GROWING**
- Master of Nursing – **GROWING**
- DNP Program – **GROWING**
- PhD in Nursing - **GROWING**



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Enrollment Opportunities

Relatively low student debt at graduation

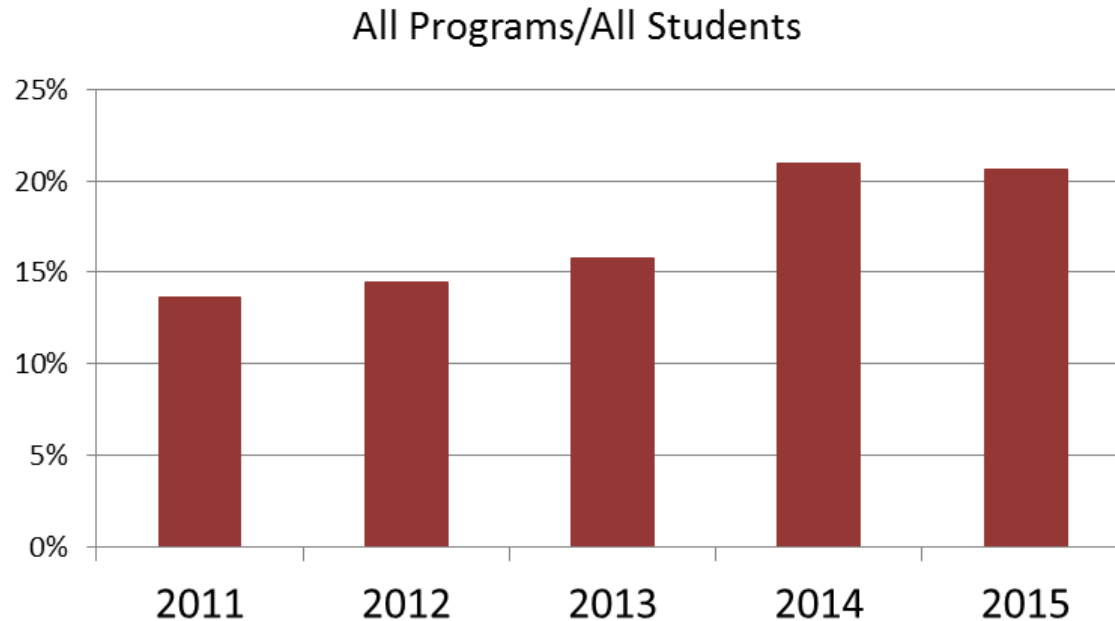
Program	% Students with Loans	Loans at Graduation	
Bachelor of Science in Nursing (BSN)	72%	\$33,161 *	
Doctor of Nursing Practice (DNP)	74%	\$68,104	
Master of Nursing (MN)	90%	\$45,410	
Doctor of Philosophy in Nursing (PhD)	43%	\$25,788	

*Excludes PLUS loans



Enrollment Opportunities

Growth in students of color



Challenges for meeting workforce

- Clinical placements
- Faculty recruitment
- Financial support for doctoral students



The School of Dentistry advances health through scientific discovery, innovative education, and the highest quality care for all communities.



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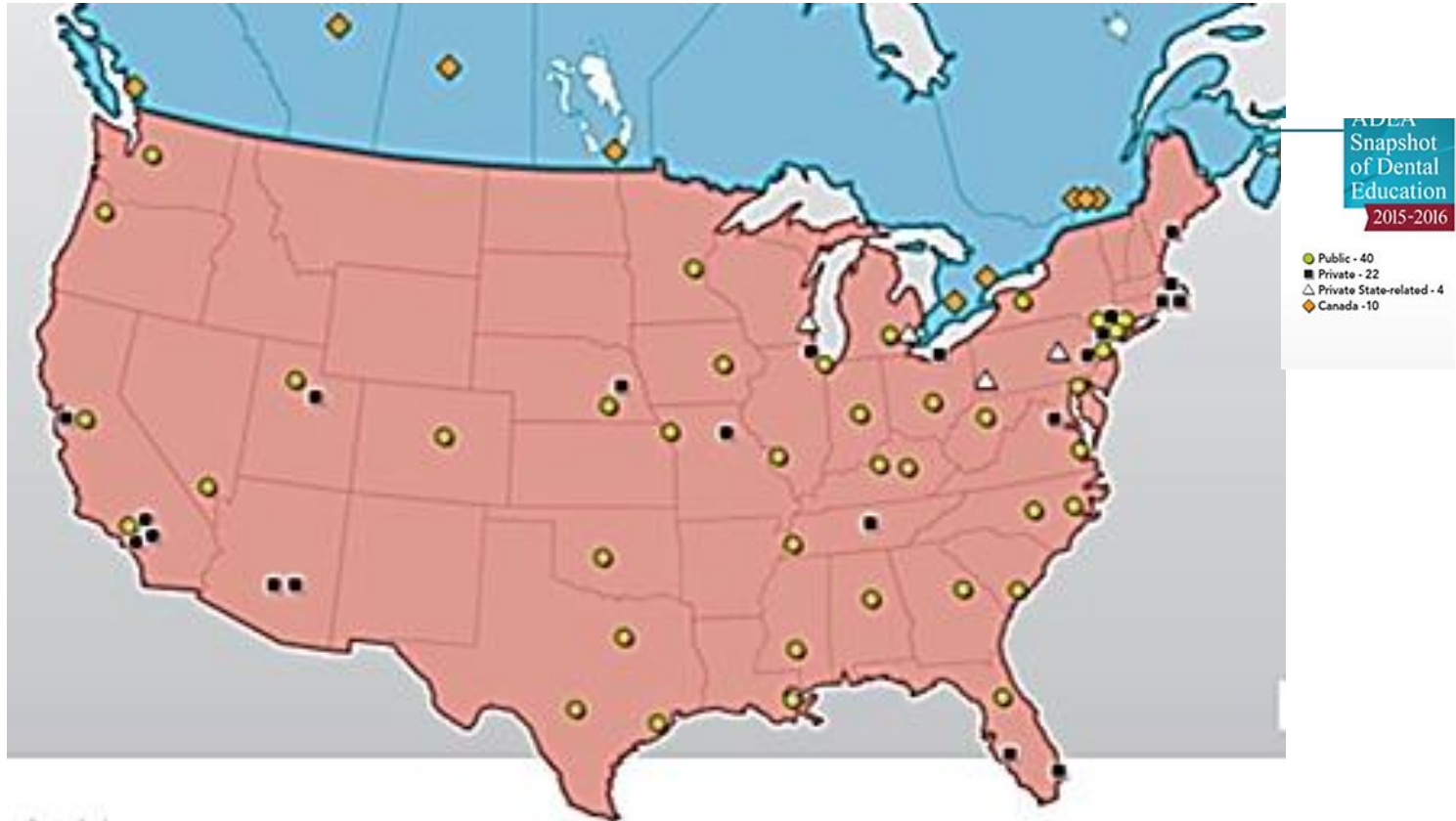
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Our works affects every Minnesotan

- We educate 73% of Minnesota dentists; 57.8% of Minnesota's practicing specialists; and 49% of its dental educators;
- Researchers develop dental materials used by every dentist in the state;
- Clinics have >153,900 patient-visits annually;
- Innovative outreach programs serve thousands of low-income patients;
- State's #1 provider of services to uninsured & working poor



A regional resource



Source: American Dental Education Association
Dean's Briefing Book, 2015-16



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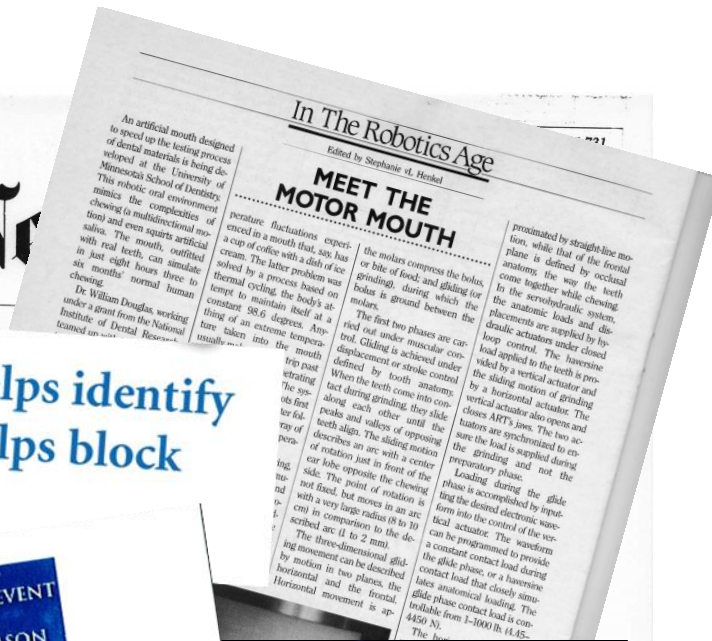
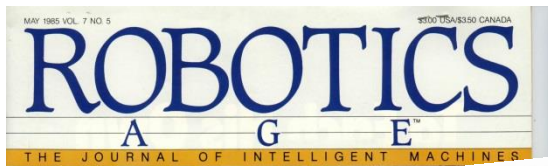
Nationally Recognized Gies Award for vision

An award so nice we won it ~~twice~~ *Four times*

- Advancing new licensure standards (2010)
- Biomaterials and biomechanics partnership (2013)
- Advancing dental therapy education in the U.S. (2016)
- Outstanding achievement by a dental educator (2016)



Research Leader



NIDR Research Digest

ARTIFICIAL MOUTH RESEARCH TOOL

Scientists at the University of Minnesota Dentistry, supported by the NIDR, have developed a biomechanical system that simulates both the chewing motion and environmental conditions in a human mouth. This unique device could have a major impact on dental research and treatment by expediting the evaluation of new materials used in dental practice.

Time-effectiveness is a significant feature of this system.

School of Dentistry researcher helps identify mechanism in drug target that helps block HIV's ability to spread.



THE MUSICAL EVENT OF THE HOLIDAY SEASON

The New York Times

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February 17, 1998

Linking Infection to Heart Disease

By DENISE GRADY

The NIDR Research Digest, highlighting recent research advances, appears periodically as an insert in the *AADR & JADR*. Its purpose is to communicate NIDR research findings and other activities of interest to those working in the field of dental research.

Requests for additional information on NIDR or its programs may be addressed to Public Inquiries and Reports Section, NIDR, Building 31, Room 2C35, NIH, Bethesda, MD 20892. Telephone: 301/496-4261.

computer system that measures changes in the surface anatomy of teeth and evaluates wear characteristics of restorative materials. The tooth surface is profiled before, during and after testing. The profiles are then overlapped and the changes portrayed in a colorful three-dimensional graphics.

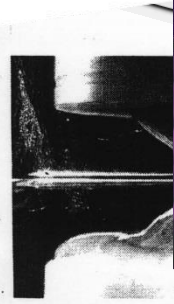
A major feature of this system is the sensitivity of a change in a tooth or restoration at about 40-50 microns (the approximate thickness of a human hair). ART's computer identifies changes at 4-5 microns. Early detection of minor changes in dental products or natural teeth may prevent more serious problems months or even years later.

...of five years of chewing in just a few weeks.

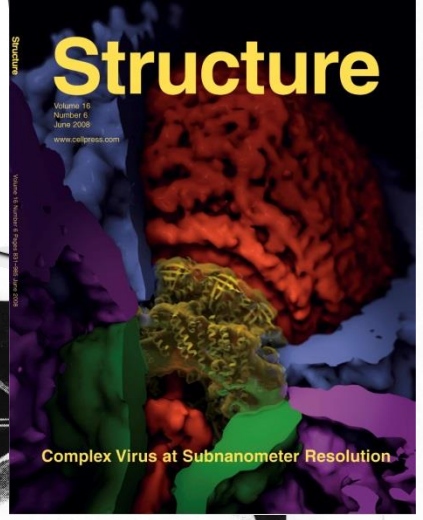
Because the American diet has become so soft, the force involved in chewing food turns out to be surprisingly small, Dr. Douglas says, per se three pounds at most. Teeth sliding, in contrast, can generate forces of 20 to 40 pounds.

First studies with the artificial th are exploring the wear of two sets of human enamel against each other, and of enamel against the matrix used in tooth fillings and restorations.

This unique device could have a major impact on dental research and treatment by expediting the evaluation of new materials for use in dental practice," said a report on the Minnesota mouth by the National Institute of Dental Research.



Device that enables scientists to study chewing and conditions of the mouth.



Structure

Volume 16
Number 6
June 2008
www.cellpress.com

Complex Virus at Subnanometer Resolution

National Institute of Dental Research

Areas of research strength

- Biomaterials & biomechanics
- Bone biology & craniofacial development
- Oral Health disparities & community health
- Oral inflammation & cancer
- Orofacial pain and neuroscience
- Oral infections & microbiology
 - Breakthrough discoveries in viral DNA packaging
 - Nationally recognized for novel approach to HIV research



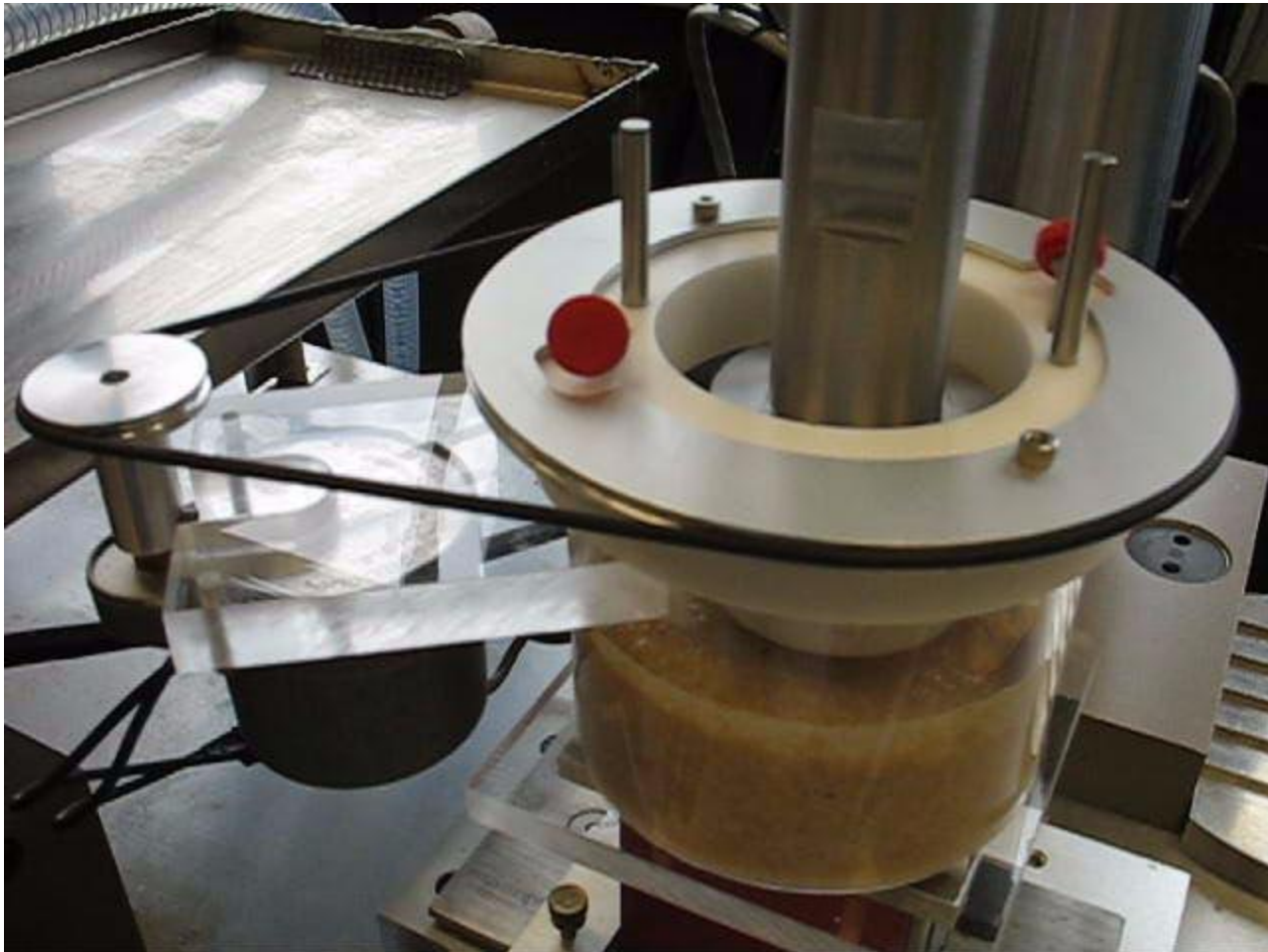
Research leader: Biomaterials & Biomechanics

- Multi-disciplinary center; early into robotics
- Develops & tests dental materials
- Fuel core analysis of graphite-moderated nuclear reactors
- Disrupt adhesion of biofilms to prevent colonization
- Develop microstructure to support combination of two medications into single tablet without separating or ‘delaminating’
- Food product reformulation



Artificial Mouth

One year of chewing in a single day



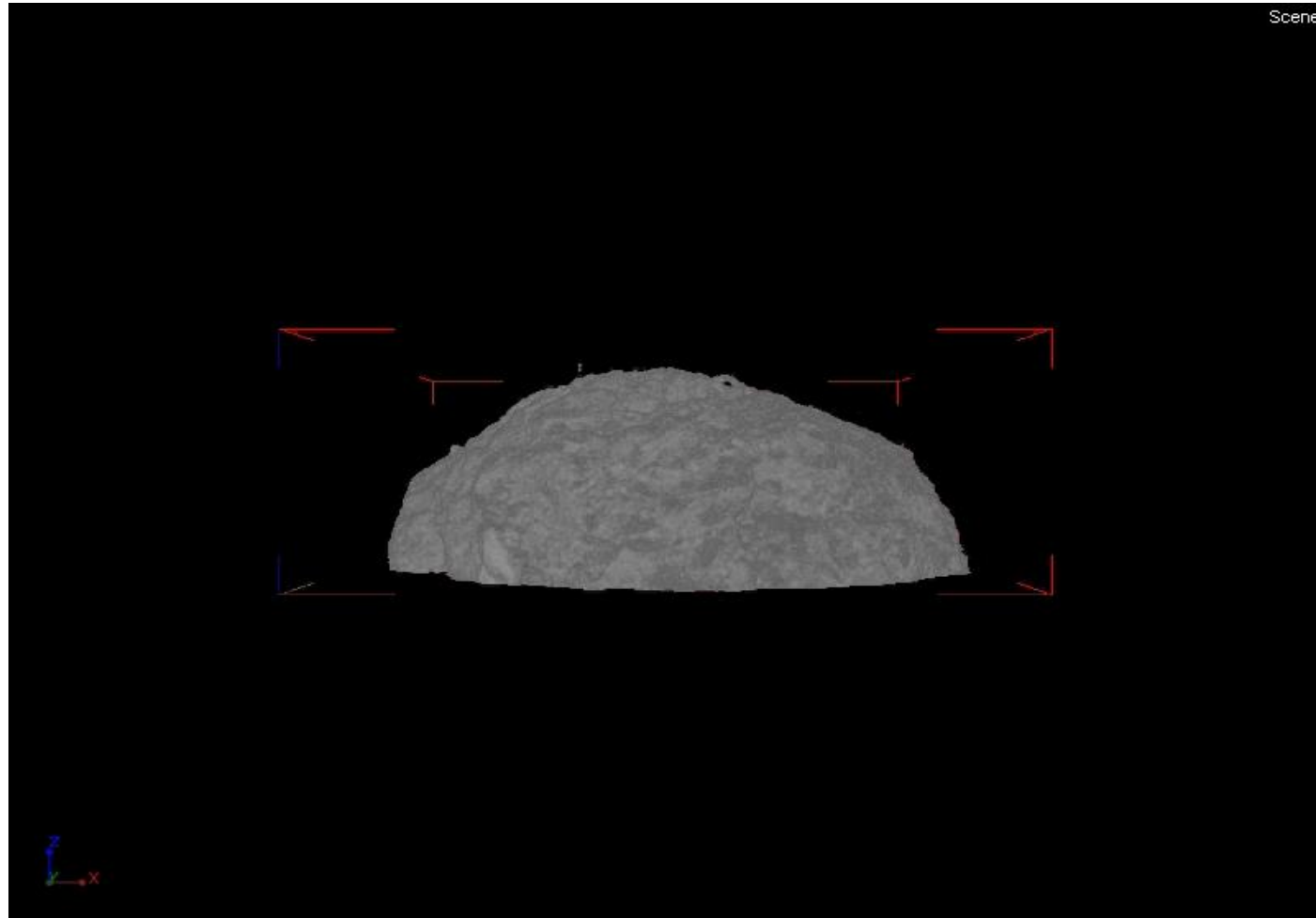
Micro CT Scanner

3D image of the inside of a structure

- Can view biological changes taking place
 - inside a tooth during de- or re-mineralization
 - Inside bone during resorption
 - Inside a piece of food as it collapses during eating



Micro CT Scanner



The nation's first: Dental Therapy Education



ADA News June 1, 2009 5

University of Minnesota reviewing applications for nation's first dental school-based dental therapy program

BY KAREN FEE

Minneapolis—Dr. Patrick M. Lloyd, dean of the University of Minnesota School of Dentistry, is well aware of the greater awareness and interest in the first group of individuals in the nation to perform procedures that up to now were provided only by licensed dentists.

But he said the school's faculty who have researched dental therapy education programs that operate in other countries made clear that there still, wherever dentists and dental therapists side-by-side is the key to long-term success.

"Dental therapy students educated with dental students develop a collegial relationship and an

entry needs to be able to respond as follows.

"We recognize the economic crisis comes up unique challenges in the near right now, and we're pleased that the University of Minnesota's Academic Health Center has been able to make commitments to support faculty requirements and faculty recruitment independent of state funding," said Dr. Lloyd. "We would not be able to develop this program without new resources.

The trade is an indication support resources in fact. Applications for the 10 degree class have already under review for the school admission committee. The programing dental therapy through in faculty careers of Dr. Lloyd and the idea

program, which enables a dental therapist with additional education and training to provide surgical procedures under the general supervision of a dentist, will need time to determine the education, curriculum, training sites and the overall level of education for the added credential. It will be four years before the first group of dental therapists has completed their education, so the



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Teaching with techno



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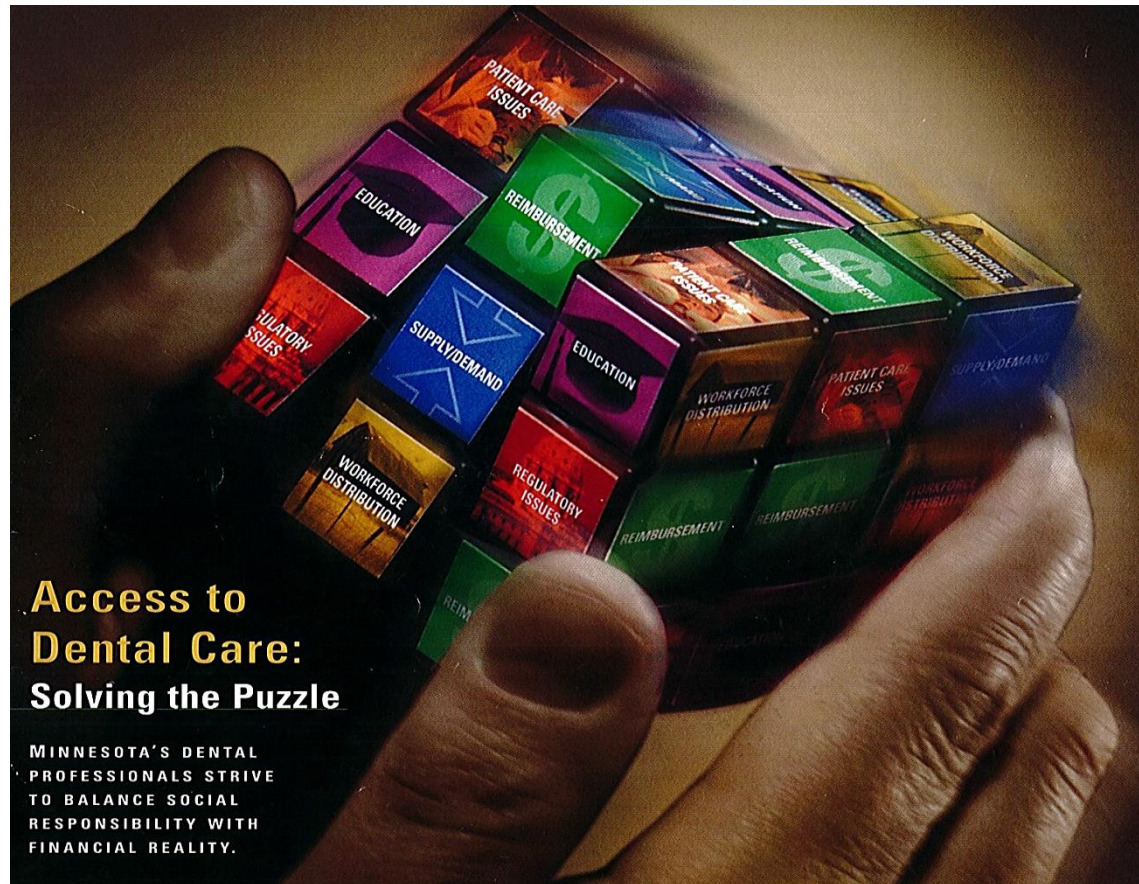
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Education & patient care

- 153,900 patient-visits/year
 - Clinics in Moos Tower, CSC, UMP, Fairview
 - 16 outreach clinics
- Team-based approach to education & patient care
- Partnering for success
 - UMP, community-based clinics, foundations, area hospitals, community colleges, FQHCs, corporate leaders, U of M administration and colleges/departments



Leader: Health Care Access Initiatives



Access to Dental Care: Solving the Puzzle

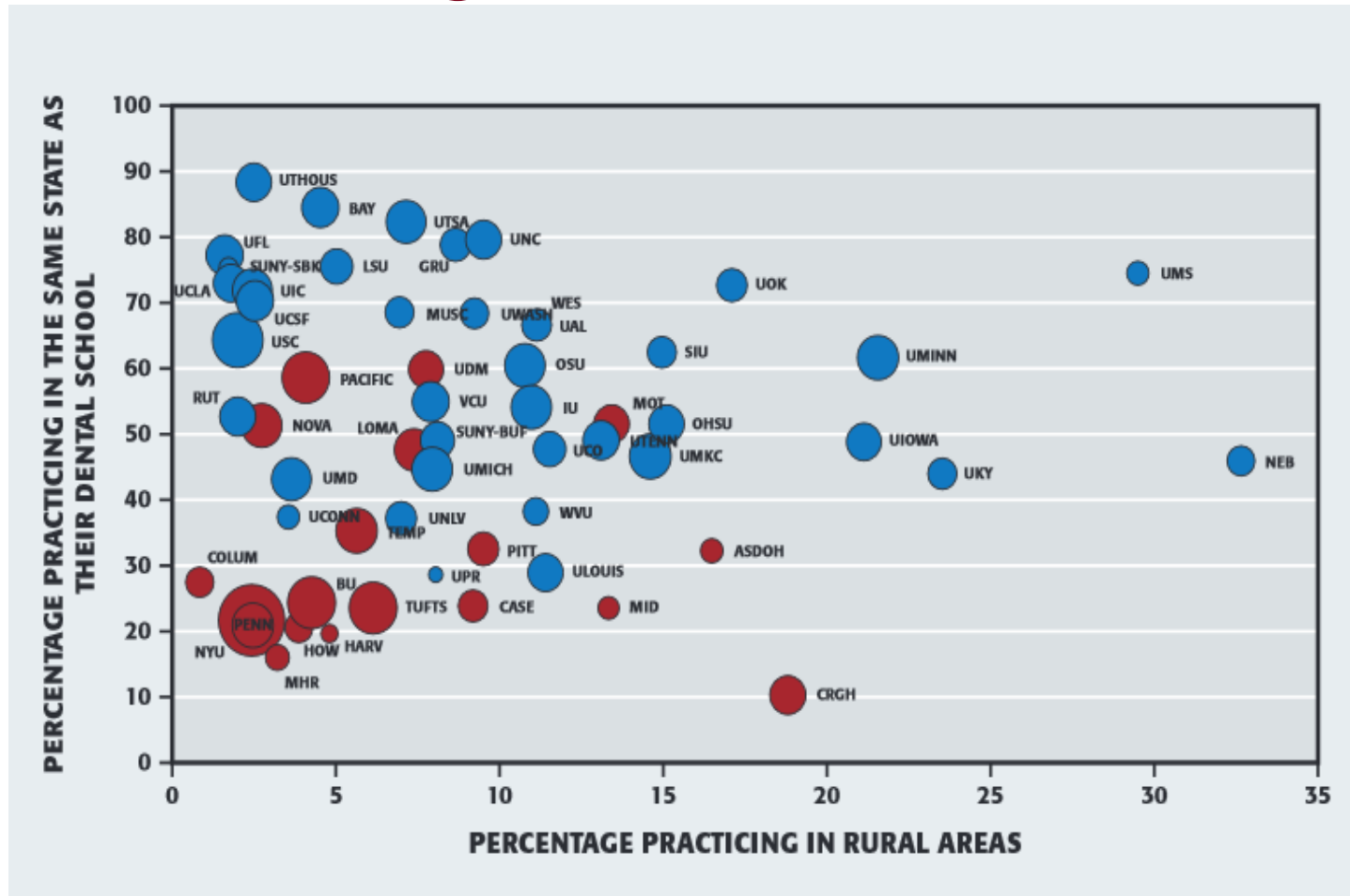
MINNESOTA'S DENTAL PROFESSIONALS STRIVE TO BALANCE SOCIAL RESPONSIBILITY WITH FINANCIAL REALITY.



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A leader in rural placement of graduates



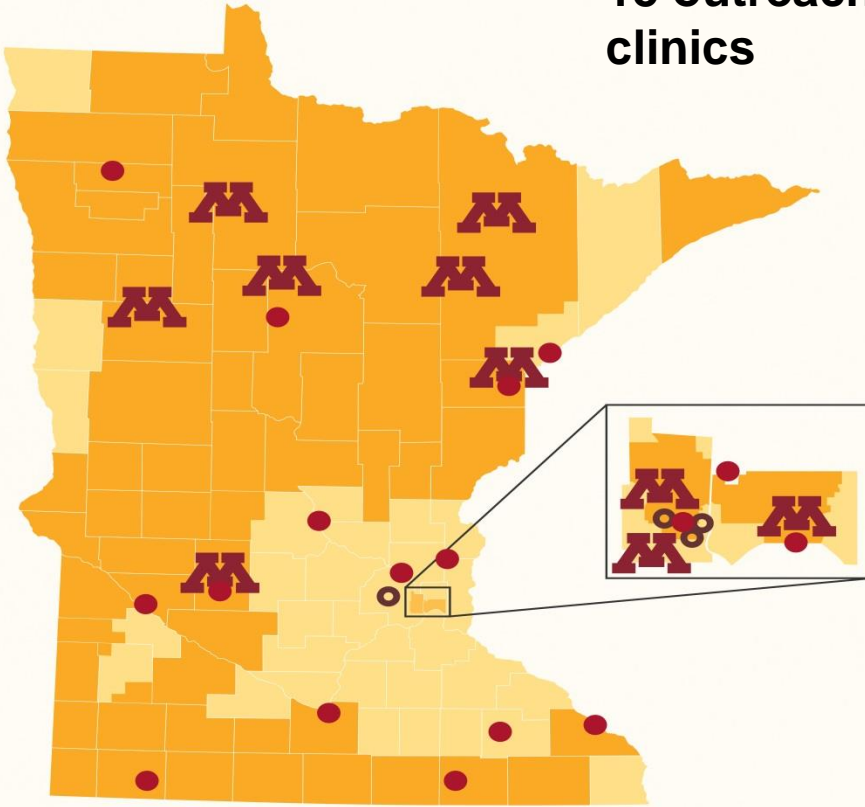
Initiatives

- Pipeline programs
- Adjust admissions policies
- Increase class sizes
- New education programs (PASS, DT, MDH)
- Outreach required for graduation
- Expand outreach sites
- Build new clinics & partnerships: geriatric, pediatric and adult special needs patients



Statewide/Regional Outreach

15 outreach clinics



-  Health professional shortage area
-  Dental Clinics
-  Mobile Dental Clinic stops
-  Resident rotations

Urban: 3

Greater Minnesota (7)
Hibbing, Cass Lake,
Cook, Cloquet, Red Lake,
White Earth, Willmar

Out of state (5)
North Dakota (1), South
Dakota (3), Montana (1)

**On hold: UCare Mobile
Dental Clinic**



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Plans going forward

- Rural track dental program
- Expand outreach sites
- Interprofessional education
- Infuse research into education programs



College of Veterinary Medicine

Current strengths in health research the UMN include should expand its definition to include individual care as well as health of populations, animals and environment

~ Healthier Animals, Healthier Economy, Healthier People

Animals

Dogs ~ 1.3 million (780,000 homes), Cats ~ 1.5 Million (680,000 homes)
Horses ~ 200,000, Farm animals ~ 70 Million, Wildlife ?

Economy

MN is 1st in turkey, 2nd in swine, 6th in dairy, 9th in beef and egg layers

People

Safe food, prevent zoonosis. ensure quality of life

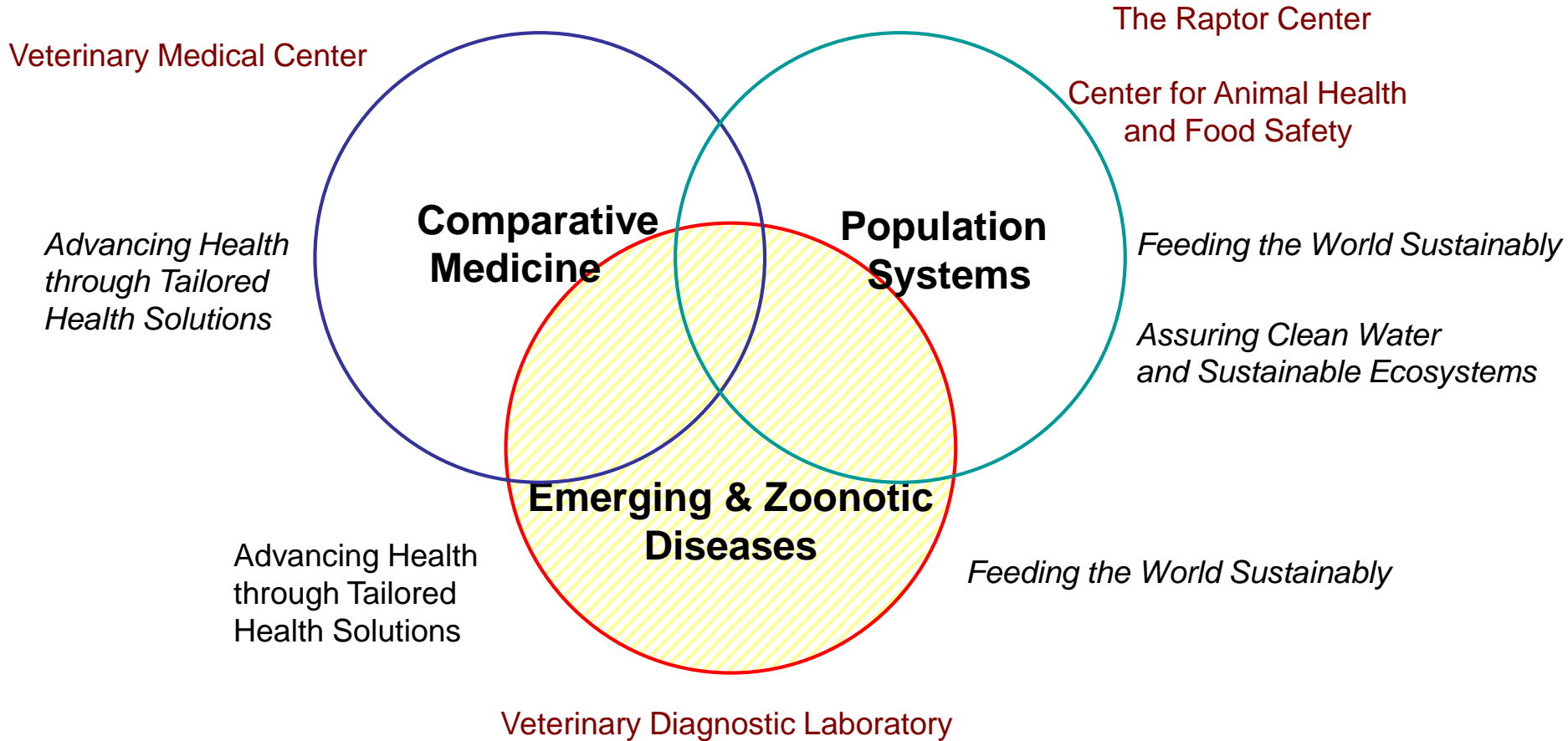


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College of Veterinary Medicine

CVM has targeted research investment in Signature Programs focusing on One Health at the interface of animals, humans, and the environment, with emphasis on integration of CVM Centers



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College of Veterinary Medicine

CVM has targeted research investment in Signature Programs focusing on One Health at the interface of animals, humans, and the environment, with emphasis on integration of CVM Centers

Veterinary Medical Center

The Raptor Center

Center for Animal Health and Food Safety

Advancing Health through Tailored Health Solutions

The logo features the text "iCOMOS" in a large, bold, black font with a red vertical bar on the left. Above it, "Comparative" and "Population" are written in a smaller font. Below the main text, "THE SCIENCE BEHIND ONE HEALTH" is written in a smaller, all-caps font. At the bottom of the logo, "International Conference on One Medicine One Science" is written in a white font on a red background. The logo is set against a background of laboratory glassware and is overlaid by two overlapping circles, one blue and one green.

Feeding the World Sustainably

Clean Water Sustainable Ecosystems

Advancing Health through Tailored Health Solutions

Emerging & Zoonotic Diseases

Feeding the World Sustainably

Veterinary Diagnostic Laboratory



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College of Veterinary Medicine

Workforce Selection

Grades

Experience

Interview

Pipeline programs

- rural food animal
- diversity



Behavioral Interview

- Communicate effectively
- Uses sound judgment
- Thinks innovatively
- Builds relationships
- Drives for results
- Demonstrates adaptability
- Acts autonomously and competently
- Demonstrates integrity

Professional Development

Development

Clinical communication

Teamwork

Leadership

Ethical behavior

Small business management

Personal finance

Multicultural awareness, etc.



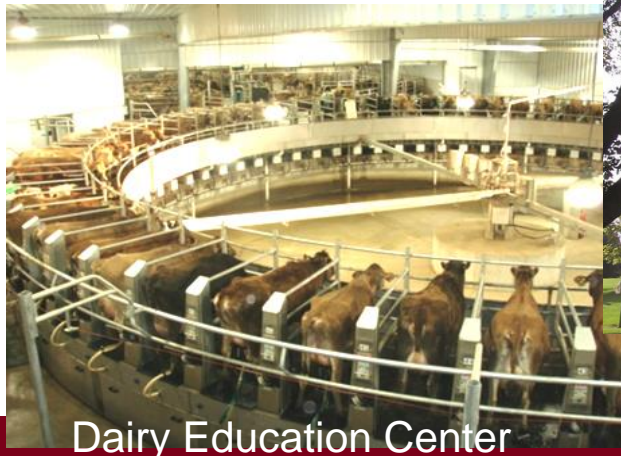
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College of Veterinary Medicine

Excellent Professional and Clinical Training Programs

- Veterinary Medical Center
- Veterinary Diagnostic Laboratory
- The Raptor Center
- Leatherdale Equine Center
- Dairy Education Center
- Center for Animal Health and Food Safety
- Food Protection and Defense Institute
- Combined DVM/MPH (with SPH)
- Combined DVM/PhD
- Interprofessional Education



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College of Veterinary Medicine

Veterinary Student Debt

- UMN CVM 4 year tuition ranks 5/30 (\$133K) for resident and 2/30 (\$240K) for non residents compared to other US CVM's
- Should not exceed starting salaries by more than a ration of 1:1.4*
- Applicants have dropped from 1,100/yr for 100 admissions to 900/yr over 8 year period (those not accepting offers cite high tuition)
- Addressed through the following:
 - Value graduates bring to employers
 - Limiting cost of attendance
 - Higher starting salaries
 - Post graduate loan management/forgiveness

*AVMA Veterinary Economics Reports



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Strategic Policy Questions

- How can the University build on its current strengths and further enhance its national and international stature in health research?
- How can the University meet the growing and rapidly changing health professional workforce needs in Minnesota?
- How do we leverage existing resources most effectively to impact the challenges of a growing aging population on families, communities and the state?

