Life Sciences Spokane
VISION 2030: The Creation of a Health Care and Life Sciences Industry Hub

October 10, 2018

Marcelo Morales, Founder A4Ventures, VISION 2030 Co-Chair
A Little Bit of History

- MOMENTUM ’87
  - Establish an Education Hub
  - Reinvigorate Downtown
  - Higher Education Presence
  - “Riverpoint Campus”
University District Growth

- 1996 – EWU / WSU Programs
- 2002 – EWU Health Sciences Building
- 2008 – WWAMI UW-WSU partnership
- 2009 – WSU College of Nursing
- 2010 – WSU Health Science Campus Designation
- 2013 - 2nd Year WWAMI Education
- 2014 – Elson S. Floyd College of Medicine
- 2014 – UW-GU Regional Health Partnership
- 2016 – Spokane Teaching Health Clinic
The Vision

• World-class center for health and medical sciences education
• Life sciences research and commercialization
• Healthcare and life sciences industry growth
• Unprecedented economic impact
VISION 2030

SINGLE MOST IMPACTFUL ECONOMIC DEVELOPMENT OPPORTUNITY

$1.7 billion annual economic impact
9% Growth in Local GDP
9,000+ New Jobs
Current Structure

LIFE SCIENCES SPOKANE (VISION 2030)
CREATING A HEALTH CARE & LIFE SCIENCES INDUSTRY HUB

EXECUTIVE ADVISORY COUNCIL
CHAIR: Jeff Philipps, VICE CHAIRS: Marcelo Morales, Dr. Francisco Velázquez

HEALTH & MEDICAL SCIENCES EDUCATION
Co-Chairs:
Dr. Darryl Potyik
Dr. Jim Hupp

- Medical Education
- Advocacy
- Clinical Training Capacity
- Graduate Medical Education Support

To be driven by GSI with support and advocacy from this committee:
- Health Sciences & Allied Health Workforce
- K-12 & STEM Pipeline Development

GSI STAFF: Alisha Benson, Meg Lindsay, Stacla Rasmussen

BIOSCIENCE RESEARCH & BUSINESS DEVELOPMENT
Co-Chairs:
Dr. Francisco Velázquez
Marcelo Morales

- Business Development
- Industry Expansion & Retention
- Entrepreneurial, Start-Up & Accelerator
- Precision Recruitment
- Industry Based
- Academic Based
- Research & Commercialization
- Industry Research
- Academic Research Growth

GSI STAFF: Todd Mielke, Robin Toth, Jessi Kirk, Stacla Rasmussen

ACADEMIC & INDUSTRY INFRASTRUCTURE & FACILITIES
Co-Chairs:
Dr. Daryll DeWald
Latisha Hill

- Infrastructure Development
- Research, Academic & Industry Capacity Building

GSI STAFF: Todd Mielke, Stacla Rasmussen

BRANDING, MARKETING & COMMUNICATION
Co-Chairs:
Michelle Hege
Stacey Cowles

- VISION 2030 Awareness
- Life Sciences & Entrepreneurial Culture
- Precision Recruitment Support

GSI STAFF: Maria Vandervert, Stacla Rasmussen

8/29/2018
Our Local Higher Education Assets

...wait for it...

...wait for it...

...wait for it...
Communication Disorders (BA, MS) • Occupational Therapy (MOT) • Physical Therapy (DPT) • Public Health (BS, MPH) • Health Services Administration (BA, Grad Certificate) • Health Sciences (BS) • Health Informatics (BS) • Dental Hygiene (BS, MS) • RIDE (Dental with UW) • Pre-Nursing (BSN with Whitworth and EWU) • Social Work (BA, MSW) • Addiction Studies (BA, Graduate Certificate) • Exercise Science (BS) • Recreation Therapy (BA)

Athletic Training (MSAT) • Pre-Nursing (BSN with WSU)

Nursing (BSN, MSN) • Nurse Practitioner (DNP) • Nurse Anesthesia • Practitioner (DNAP) • BS Human Physiology

Medical Degree (MD) • Pharmacy (PharmD, PhD) • Pre-Nursing (BSN with Whitworth and EWU) • Nursing (RN, MN, RN-MN, FNP, DNP, PhD) • Healthy Policy & Administration (MHPA) • Nutrition & Exercise Physiology (BS, MSCP) • Speech and Hearing (BS, MS)

Vision 2030
Life Sciences Spokane

Pre-Major: Chiropractic • Dental Hygiene • Dentistry • Medicine • Nursing (WSU 3+1) • Pharmacy (WSU Articulation Pharm-D) • Respiratory Care (BAS)

Health-Related: Addiction Studies • Dental Assisting • Dental Auxiliary • Diagnostic Medical Sonography • Echocardiography • Hearing Instrument Specialist • Invasive Cardiovascular Technology • Medical Assistant • Medical Laboratory Tech • Nursing • Nursing Assistant/Aide • Occupational Therapy Assistant • Orthotic/Prosthetic Tech • Pharmacy Tech • Physical Therapist Assistant • Radiology Technology • Respiratory Care • Surgical Technology • Vascular Technology

Community Colleges of Spokane

Four-Year Medical School (MD with Gonzaga) • MEDEX Northwest (Physician Assistant Training, MS) • RIDE (Dental with EWU) • School of Medicine Family Medicine Residency Program
Our Other Assets

- World-class health care industry & services
- Growing academic and industry research
- Competitive cost of living
- Lower cost of doing business
- Collaborative spirit
The Road We Have Traveled

PAVING THE WAY
FOR LIFE SCIENCES SPOKANE

When you’re stuck in road construction, you’re seeing a project nearing completion. It may have started as an idea to solve a problem, which led to gathering and compiling resources, drawing up the design and stages of implementation, all leading up to you, sitting in a line of cars, anxious for that new road to open and reduce your commute time. Since the inception of VISION 2030, we have been collaborating with a variety of partners in the community and examining this endeavor from many angles, from education and research to business development and community health care. Here is a roadmap of our progress so far and the next steps we are taking in our goal to make Spokane a nationally recognized life sciences and health care industry hub.

SEED
Momentum ’87, a community initiative, set the stage for the development of the Riverpoint Campus with a focus on creating a collaborative, multi-institutional hub of higher education and collaboration in downtown Spokane.

FOUNDATION
5 Universities and our Community Colleges system are co-located within the 770-acre University District, offering numerous health sciences programs in partnership with our two 4-year medical schools and the Spokane Teaching Health Clinic.

WORK PLAN DEVELOPMENT
Economic studies were reviewed, current assets and resources were inventoried, existing research and funding sources were identified, and input from the community was gathered to develop a high-level work plan.

COLLABORATION
GSI partnered with business and community organizations, health care systems, and academic institutions, gathered data for focused baselines, and engaged their leadership to provide strategic expertise in identifying the most critical needs and how to meet them.

GOAL
Annual economic impact of up to a 9% increase in GDP and more than 9,000 high wage jobs

INDUSTRY GROWTH TARGETS IDENTIFIED
Areas of life sciences where we have existing expertise and the greatest potential were identified. They include infectious disease prevention and biomaterials, research/clinical trials for cancer, diabetes, renal disease, and other metabolic syndrome diseases.
Where We Are Going; What Is Next

Continue to convene and collaborate to address priority projects that result in more physicians and rural care access, while growing additional ecosystem components to create a robust life sciences economy in the Spokane region.

- Growth of the health sciences’ and medical schools’ enrollment
- More graduate medical education opportunities
- Development of the K-12 STEM pipeline
- More nursing and psychology faculty
- Additional wet lab and dry lab space
- Sufficient educational clinical capacity; both teaching providers and facilities
- More affordable entrepreneurial start-up and accelerator space
- Additional academic and industry research being conducted
- Comprehensive commercialization support services and funding organizations
- Expansion and retention of existing life sciences businesses in the Spokane region
- Recruitment of new life science businesses into our area
Questions?
COMPARISON OF TRADITIONAL VS. FLIPPED CURRICULAR MODELS

Example of a Traditional 3-Credit Course Design (9 hrs assigned effort per week)

IN CLASS
- Teachers deliver the facts during lectures
- Learners begin to accumulate knowledge (grey matter)

AFTER CLASS
- Assignments provide experience needed to integrate knowledge and demonstrate competency upon evaluation

LEARNING TRAJECTORY

EXPOSURE

COMPETENCE

Bloom's Taxonomy of Learning (Increasing cognitive complexity)
- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating

IN CLASS
- Homework assignments provide learners with the experience required for knowledge integration and deeper learning.
- Learner frustration can be high as application questions become complex while access to teacher assistance is limited.
- Peer support is important for tackling assignments independently, but lectures do not facilitate socialization. Some learners establish supportive networks, but others remain isolated or intermittent.
- Misunderstandings can become entrenched, and only revealed at examination
- Competency established through examination

AFTER CLASS
- Teacher grades homework assignments and provides assistance if consulted (office hours)
- Learners complete assignments to integrate knowledge & accrue experience
- Evaluation of competency

Example of Our New 3-Credit Course Design (still 9 hrs assigned effort/week)

BEFORE CLASS
- Teacher delivers facts in online videos, audio, readings or assignments
- Learners begin accruing knowledge (grey matter)

IN CLASS
- Teacher guides active learning exercises
- Learners' integrate knowledge & experience is accelerated

AFTER CLASS
- Teacher available for consultation (office hours)
- Learners complete assignments to deepen knowledge & prepare for next class
- Evaluation of competency

LEARNING TRAJECTORY

EXPOSURE

COMPETENCE

Bloom's Taxonomy of Learning (Increasing cognitive complexity)
- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating

IN CLASS
- Content experts create instruction materials for learners to review
- Learners have the flexibility to watch/listen/read where/when/how suits them
- Integrated questioning aids retention, provides immediate feedback on comprehension, & helps teachers identify where clarification is needed in class

AFTER CLASS
- Assignments build on class activities & momentum to create even deeper learning and greater competency.
- Social classroom synergizes learner collaboration and peer support outside class
- Misunderstandings and frustrations are reduced
- Revision & evaluation assures learner competency

RIGID SYSTEM OF DELIVERY; PASSIVE LEARNING

INEXPERIENCED LEARNERS WITH LITTLE COHESION & LIMITED ACCESS TO TEACHER ASSISTANCE; INEFFICIENT LEARNING

FLEXIBLE SYSTEM OF DELIVERY; BLENDED LEARNING

COLLABORATIVE & ACTIVE CLASS; EXPERIENTIAL LEARNING

SYNERGIZED LEARNERS WITH COMPETENCE; DEEP LEARNING
Key initiatives and milestones

- Established a funded alumni mentoring program
- Began a stepwise increase in PharmD enrollment
- PharmD program reaccredited
- Launched the Yakima extension
- Began 3-year phase-in of active learning
- Developed PharmD/PhD concurrent degree option
- Rollout of new professional curriculum completed
- Developed PharmD/MBA concurrent degree option

2011
- Implemented peer review of teaching
- Created an Honors program
- Obtained funding for core laboratories

2012
- Began 3-year phase-in of competency-based curricular delivery

2013

2014
- Established a Teaching Fellows program
- Established a funded community pharmacy residency program
- Launched the Inaugural Transformation and Innovation in Pharmacy Education (TIPed) Institute

2015

2016

2017

2018
- Name changed to Pharmacy and Pharmaceutical Sciences
- Established the Pharmacy Practice Research Center
- Designed and implemented a platform to delivery pharmacy CE worldwide
- Inaugural Yakima cohort enters its final year and prepares to graduate

College of
Pharmacy and Pharmaceutical Sciences
Washington State University
College of Nursing

Joyce Griffin-Sobel, PhD, RN, ANEF, FAAN
Professor & Dean

Mel Haberman, PhD, RN, FAAN
Professor & Executive Associate Dean

October 10, 2018
STEM Alliance Meeting
One College that functions as an integrated multi-campus system.

900+ students
RN-BSN
BSN
MN
DNP
PhD

Sim at 3 sites
High Fidelity Simulation

Program of Excellence in Clinical Performance & Simulation

• Kevin Stevens, Director, PECPS, Spokane, TriCities, Yakima
• Barb Wallace, Skills lab director
• Michelle Pelchat, Simulation technician
• Sim facilitators: Laura Wintersteen, Kyra Schmidt, Corey Risse, Mikel Allen (Spokane)
• Lee Punch (TriCities)
• Linda Baumgarten (Yakima)
High Fidelity Simulation

- Students gain experience through active learning, using manikins, standardized patients, and realistic healthcare scenarios (simulations) under guidance of experienced faculty and staff.
High Fidelity Simulation

Clinical and Behavioral aspects of healthcare delivery

• Developed 15 Sims for BSN & 10 for military
• Crisis management
• Communication
• Sound clinical decision-making
• Patient safety
• Teamwork
• Leadership
• Error prevention
• Social Justice
Recent Sims offered to students

- IPE: Active Shooter SIM, (Nursing, Medicine, Pharmacy, NEP, Speech/Hearing)
- IPE: Cardiac Sim, all campus disciplines

Casualty First Responder Simulation
Participants will learn how to take immediate steps to stabilize persons injured in a mass casualty incident, practicing applying a tourniquet correctly, maintaining a patent airway, stop bleeding, and improvise until help arrives. Students will work in teams to practice new skills and debrief the experience.
High Fidelity Simulation

Stats

• 450 hours simulation in Spokane per semester
• 100 each in TriCities and Yakima
• All BSN students graduate with 30 hours of Sim
• Cost: size, equipment, staffing, mission, target audience
• Each manikin is $75-90K
Standardized Patients

- Our **standardized patient coordinator** recruits and trains people for a variety of scenarios as different types of simulation learning.
- Medical surgical
- Mental health
- Community health
- Nursing fundamentals
- Obstetrics
- Pediatrics
- Interprofessional care
Community Partners

- WA Air National Guard Medics & Nurses
- WA Army Guard Combat Medics
- UW Medex Physician Assistance Program
- WSU Nutrition and Exercise Physiology Program
- EWU Speech and Hearing Program
- WSU Athletic Trainer Program
- Spokane Community College
- Spokane Public Health District
- WA Assoc. Nurse Anesthetists
WSU College of Nursing Simulation

https://youtu.be/rd0B9u_58K0

4:36
Contact Information

Kevin V. Stevens, MSN, RN, MS, RD, CHSE | Director, Center for Clinical Performance & Simulation

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Sleep and Performance Research Center
Human Sleep and Cognition Laboratory

Hans Van Dongen, Ph.D., Professor and Director
Stephen James, Ph.D., Assistant Research Professor
Kimberly Honn, Ph.D., Assistant Research Professor
Devon Hansen, Ph.D., Postdoctoral Research Fellow
What Do We Do?

• We live in a 24/7 society, where there is a need for people to be awake and at work at all hours of the day.

• Extended work hours and night and shift work compete with the biological need to sleep and with daily rhythms driven by the biological clock.

• SPRC faculty work to answer critical questions about the effects of reduced and displaced sleep on cognitive performance and health.

• We study sleep and wakefulness in people going about their everyday lives or sequestered in the laboratory.

• Our research findings are used in the real world to educate, inform policy, mitigate the effects of sleep loss, and sustain health.
Research Outcomes

• Hours of service regulations for FMCSA
• Naval Watch Standing Schedules
• Biomathematical modeling for DOD
• Cognitive impairment in sleep disordered patients
• CDC NIOSH Law Enforcement Fatigue Management
• OR DPSST Basic Police Academy
• California Highway Patrol Vehicle Crewing
• Spokane PD Overtime Policy
Independent Colleges of Washington
Powering Regional Economies

ICW Colleges

Employ

8,000+

people, one of the top 20 largest private employers in Washington

Engage

NEARLY

200,000+
alumni that reside in Washington

ICW college expend $608M annually for payroll and benefits
Serving Washington: Students from All Counties
Attracting Talent from Across the Nation
Championing Diversity

- Low-Income Students: 30%
- Students Above Age 25: 28%
- Students of Color: 33%
- Transfer Students: 30%

*of Juniors and Seniors (transferring 45+ credits)

Source: ICM analysis of most recent Student Unit Record Data submissions.

- 50 States
- 39 Washington Counties
- 90+ Countries
- 1200+ Veterans
Leading Degree Completion

Washington’s not-for-profit colleges consistently rank among the top 5 states in terms of degree completion:

- RI 87.3%
- CT 84.3%
- MD 83.9%
- MA 83.0%
- **WA 82.8%**

Source: National Student Clearinghouse Research Center, February 2018

Source: IPEDS
Cultivating Talent
STEM degree conferrals from ICW Colleges have grown 66% between 2010 and 2017. Yet have remained at around 12% of all STEM degree conferrals in the state.
Focusing on High-Demand Fields

ICW’s share of the state’s bachelors and advanced STEM degrees in
Engineering: 19%
Science: 21%
Math & Statistics: 25%
Diversifying the STEM Talent Pipeline

- White: 60%
- Hispanic: 10%
- Asian/PI: 8%
- Black: 3%
- Other: 19%
A Public-Private Partnership Delivering Results
Staff of Science in Action!

Science Outreach Coordinator:

Jiana Stover, M.S.

Science Outreach Director:

Nancy Staub, Ph.D.

Science in Action! GU Student Staff:

Sarah Cooney  Ben Gallagher  Sophia Troeh  Katelyn Orcino
Goals of *Science in Action*!

1) Cultivate K-6 student curiosity, knowledge in science and overall scientific literacy.
2) Recruit science majors into the teaching field.
3) Help pre-service teachers develop confidence to teach science.
4) Provide additional resources to our partner teachers and schools to help teach science all the time!
Science Education Outreach Programs

*In the Classroom*

**Science In Action!** - In The Classroom & After School
Gonzaga’s longest running science outreach program, SIA! sent over 134 undergrads into 36 Spokane classrooms & after school programs, to lead 288 hands-on, inquiry-based activities in 17-18.

**Bringing Research Into Classrooms**
SIA! partners with Gonzaga faculty to adapt research projects into hands-on lessons.

**Science In The Summer!**
*SIA!* runs several science outreach programs on the Gonzaga campus during the summer (e.g., for high school students and pre-service teachers).
Science Education Outreach Programs
Pipeline-focused programs

Meet A Science Professor
We partner with Spokane Public Schools to bring 4th-6th graders to Gonzaga to tour science departments, meet professors, & do hands-on science. This program builds a pathway from the “classroom to college.”

SIA! in Antarctica
SIA!, with an NSF-funded collaborator at the Lamont Doherty Earth Observatory, will write K-6 activities based on research field work in Antarctica. Lessons will be piloted during the Spring and Fall 2019 SIA! sessions.

STEM Educator Professional Development
The Scientist Within – Phage Hunters: An intensive, two-week professional development workshop to immerse high school teachers into inquiry-based research.
Geology of Spokane Workshop: Two day workshop for Gonzaga pre-service teachers on how to incorporate Earth Science into K-12 classrooms. Includes a field trip emphasizing the importance of place-based learning.
After participating in Science in Action!

- Pre-service teachers were more confident teaching science
- Science majors were more likely to “seriously consider” a teaching career
Service Hours to Action!

Since 2007, Gonzaga students have completed over 17,780 total service hours with Science in Action!

This translates to thousands of K-6 students doing hands-on, inquiry-based science in Spokane Public School classrooms...

...And hundreds of science activities that classroom teachers can use in the future to build and encourage science knowledge and enthusiasm!

(Cumulative totals from 2007-2018)
Growth In Program Participation

Gonzaga SIA Volunteers Over Time
2007-2018

- Total SIA volunteers
- Pre-service teachers
- STEM Majors
- Non-STEM Majors

NUMBER OF SIA VOLUNTEERS

0 20 40 60 80 100 120 140 160

UWSOM-Spokane

- Profile of 2018 Entering Class
  - 60 students
  - 22 men, 38 women
  - Average age 25 y/o (range 21-37)
  - Mean MCAT Percentile 77; Mean GPA 3.67
  - 22 UW, 4 GU, 9 WSU, 3 Whitworth
    - others from EWU, Whitman, Central, Western, U of Puget Sound, Evergreen
  - Hometown
    - 17 from EWA (11 Spokane)
    - 22 from rural counties (Whitman, Chelan, Yakima, Kittitas, Kitsap, Clark, Skamania)
    - 38 from urban counties (Spokane, King, Snohomish, Pierce)
Applying to Medical School

• UWSOM Utilizes a Holistic Approach
  • Required Undergraduate Coursework
    • Chemistry, Biology, Physics, Humanities
    • Mean GPA = 3.67
  • MCAT
    • Revised 2015 – continues to assess science proficiency
    • New sections
      • Critical analysis and Reasoning
      • Psychological Social Biologic Foundations of Behavior
    • Mean MCAT percentile ranking = 77
  • Clinical Exposure (at least 40 hours)
    • Understanding of what it means to be a doctor
  • Service – Volunteer experience
  • Demonstration of Leadership
  • Research or Problem solving ability