



Colorado Clinical and Translational
Sciences Institute (CCTSI)

UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS



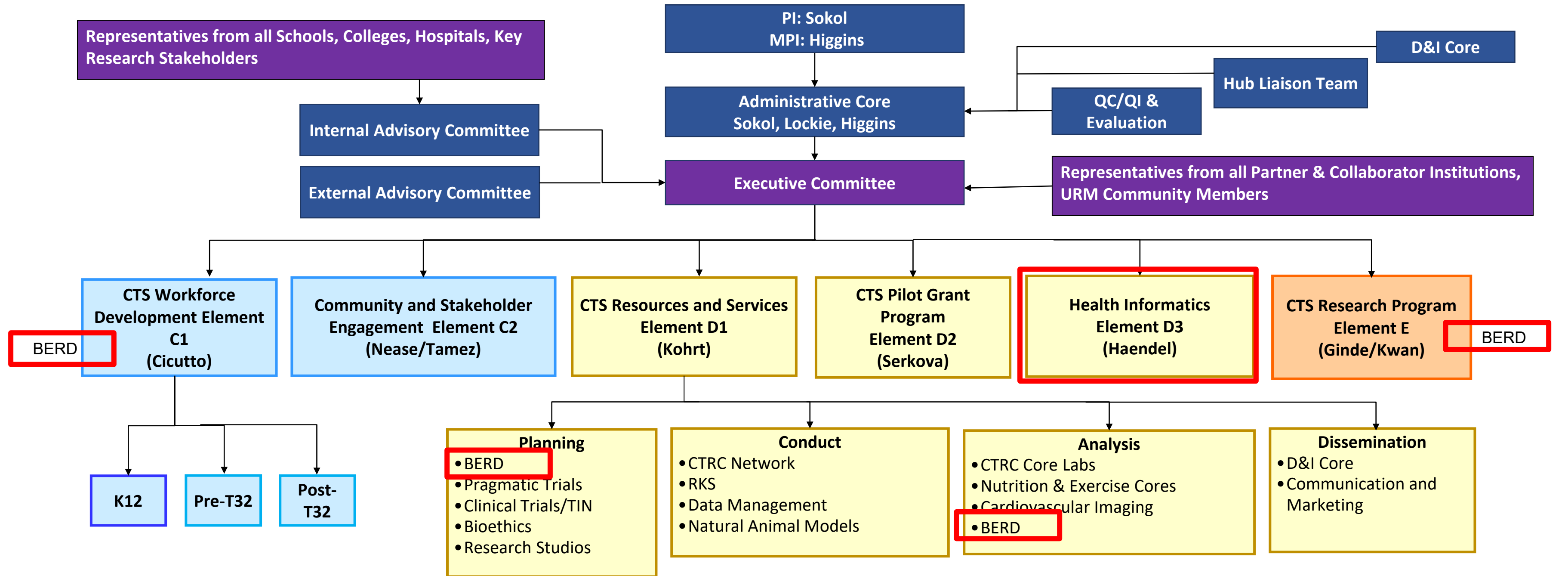
BERD

Nichole E Carlson, PhD
Professor Biostatistics and Informatics
Director, BERD & CIDA
Associate Chair, Collaboration & Team
Science

cctsi.cuanschutz.edu



Integration Across CCTSI



Leadership Team & Diversity - CIDA and BERD



Innovating research through biostatistics, informatics and data science

CIDA faculty and staff at it's fall retreat (13 students are not in the picture). A subset of this group forms the BERD.



Nichole Carlson, PhD
Professor, Director (CIDA)

Nichole Carlson, PhD - Directs CIDA and BERD
Elected as an American Statistical Association Fellow in 2023.
R01 funding for integrative radiomics phenotypes.
Working on RC2 funding (with Ian Brooks) on innovative biostatistics and informatics partnerships models.



Mary Sammel, ScD
Professor, Associate Director (CIDA)

Mary Sammel, ScD - Directs the BERD education program
Co-founded a national organization for practicing masters biostatisticians and statisticians



Katerina Kechris, PhD - Directs Bioinformatics and Data Science collaboration
R25 Multi-omics summer training grant (score 10)—awaiting funding



Camille Hochheimer, PhD
Research Associate and Consulting Manager

Camille Hochheimer, PhD: Led the formation of the CU Biostatistics and Bioinformatics Ecosystem (CUBE)
Leads the Health Data Compass partnerships

Center for Innovative Design and Analysis - BERD

All female leadership team

54% female; 4% other

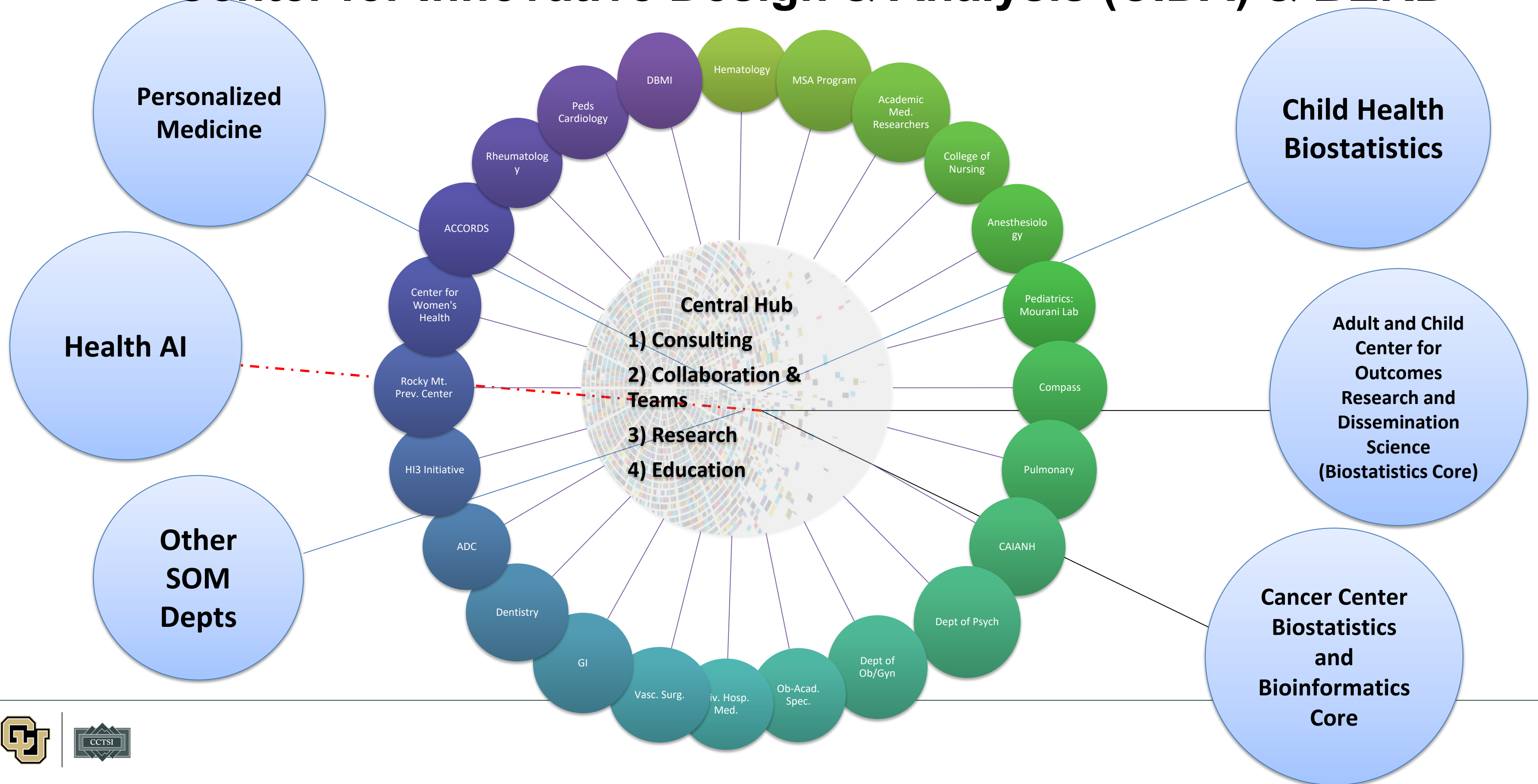
42% PhD; 33% Masters; 19% Students

3 student diversity pipeline programs



Analytic Structure of AMC Campus

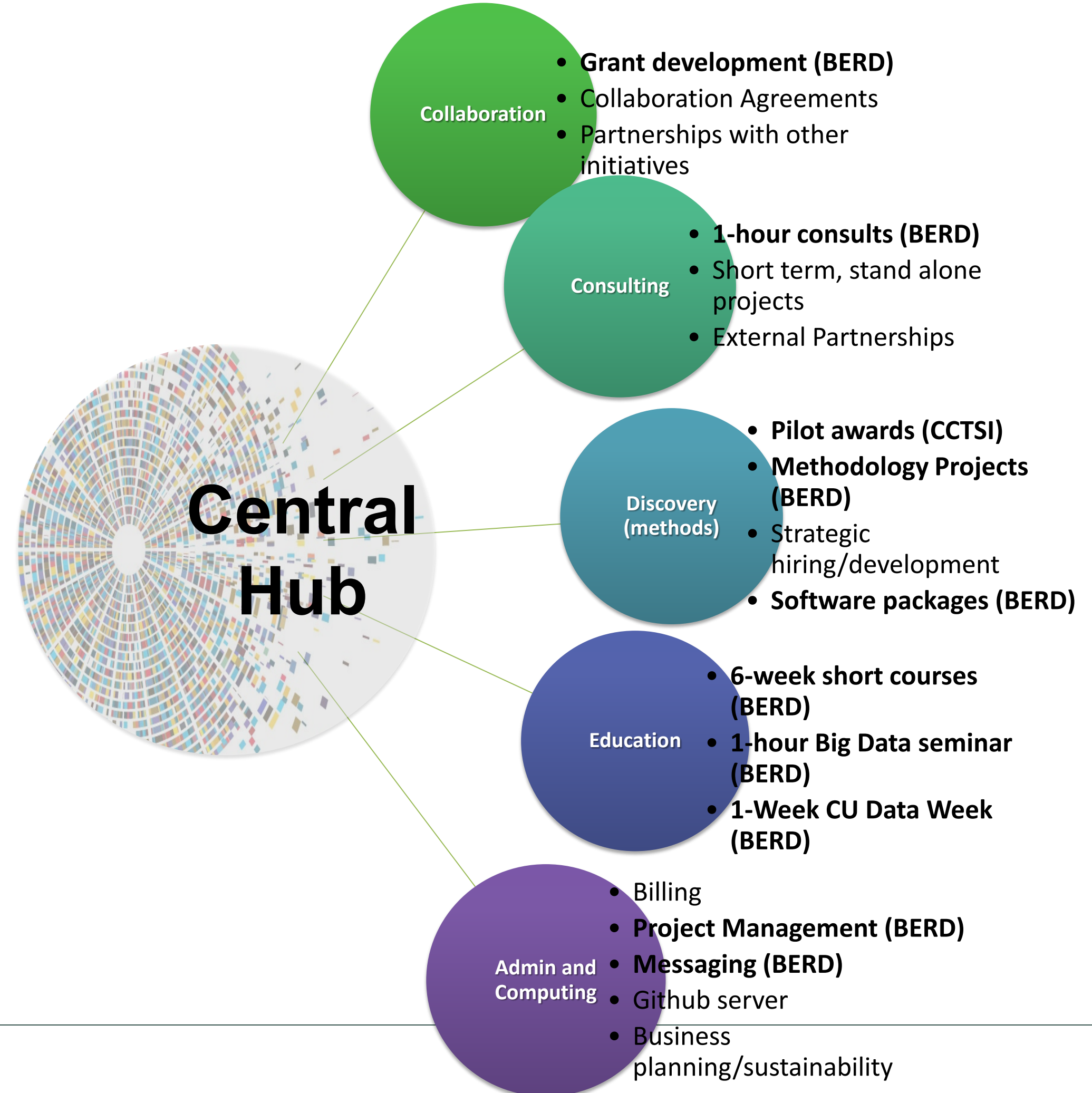
Center for Innovative Design & Analysis (CIDA) & BERD



CIDA/BERD members

- **18 PhD faculty (16 FTE total)**
- **17 Master's faculty**
- **13 Student positions (50% effort)**
- **Admin team (3 FTE)**
- **Have Clinical Teaching Position Open**

Funding Source	FY24
CoSPH	\$60K
SOM	\$300K
BERD	\$300K
Consulting & Services	\$300K
Collaboration Agreements	\$2.8M
Collaborative Grants	\$1.2M
Research Grants	\$4M



CTS Roadblocks to Address

1. Team Formation: *The right people, with the right expertise, at the right time.*

CTR requires teams with diverse expertise. To fully realize a vision of accelerated clinical and translational work we need all clinical and translational researchers (domain experts) to have efficient access to health informatics experts *AND* study design and analytic experts (biostatistics, bioinformatics, etc.) who are have the right expertise and speak a common language.

2. Effectiveness and efficiency of translational research study design:

Providing tailored study design expertise.

3. Efficient and Nimble Resources:

Develop an ability to analyze business data to predict future need, uncover the bottlenecks, and sunset resources to make room for innovation.

4. Increasing BERD literacy:

Expand BERD education by creating modular fully online resources and education for BERD members.



Strategic Goals - BERD

1. Goal: Being able to form the right analytic team at the right time

Roadblocks addressed: Effectiveness and efficiency of translational research study design & Team Formation and Efficient and Nimble Resources

2. Goal: To have BERD experts be well trained in the communication and issues in team science.

Roadblocks addressed: Team Formation, Seamless Analytics, Efficient and Nimble Resources & BERD literacy.

To meet these goals, we proposed the following objectives:

1. Collaboration and consultation.
2. Developing the workforce.
3. Application and Methods Research in Translational Biostatistics and Bioinformatics.



Year 1 Progress & Impact

By the numbers (9/1/23 - 3/15/24):

- Maintain 29 collaborative agreements
- 62 collaborative grant applications
- ~10 BERD PI applications in 2024
- 102 analyses
- 331 quick consults
- Launched a new causal epidemiology short course.
- CU data week had ~150 unique participants

HDC data delivery partnership:




Team members working directly with the data delivery team to:

1. Learn the HDC intake process and integrate study design questions into the first conversations. Outcome: Still in development. This one was the toughest as it changes culture.
2. Evaluate and develop tools for end users of self-service tools (Leaf and maybe TriNetX). Outcome: Data Delivery appreciating the FAQ's they will receive.
3. Cross train a CIDA/BERD member (Alejandro Varela) on data delivery and have them obtain EPIC training to evaluate how a differently trained team member conducts data delivery compared to a computer science/informatics trained team member. Outcome: learning the challenges and how to speak the same language.

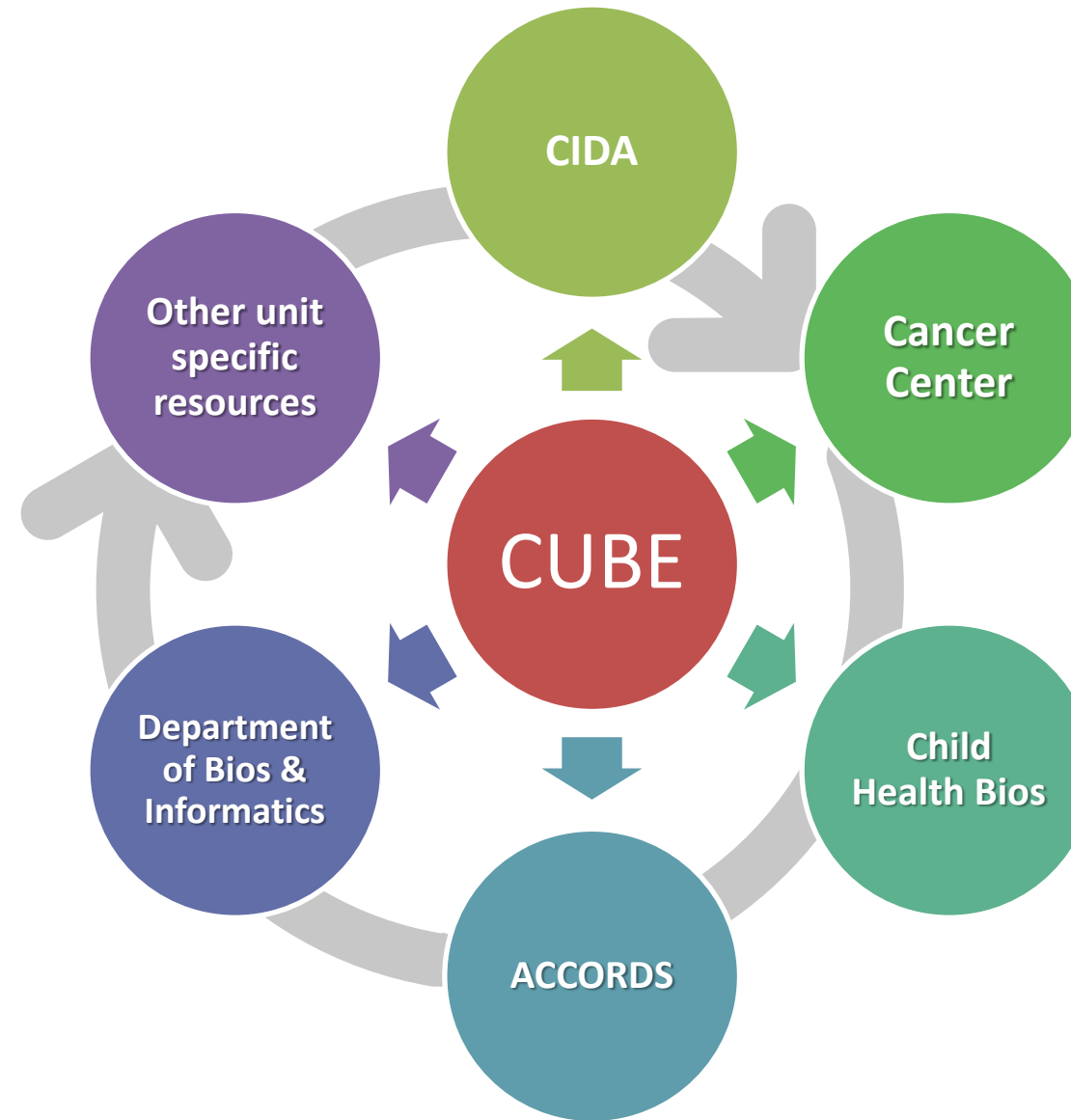


Year 1 Progress & Impact



Not sure where to start?

Connect with a CUBE Navigator who will help you find the right team to support your biostatistics and data science needs.



Camille Hochheimer, PhD; Project Lead

1. Partnership with the 5 major biostatistics programs and 2 bioinformatics programs.
2. Creates a central point of entry and navigation system for the investigator. Had all units talking about requests together for the first time. Launching 4/8/2024.
3. <https://coloradosph.cuanschutz.edu/research-and-practice/centers-programs/cida/connect-with-us/cube-navigator>

Year 1 Progress & Impact: Successes in the Science of Team Science

Grants Analysis: We also applied business and data science analytic tools to administrative data from grants to analyze trends in application and receipt of awards. In 6-months there were >2500 applications submitted. Our next step is to understand who is budgeted on these awards and the topic areas. We are in the process of analyzing our time tracking data now.

Publications:

Peterson, R. A., Hochheimer, C. J., Grunwald, G. K., Johnson, R. L., Wood, C., & Sammel, M. D. (2022). Reaping what you SOW: Guidelines and strategies for writing scopes of work for statistical consulting. *Stat*, 11(1), e496.

Hochheimer, C. J., Bosma, G. N., Gunn-Sandell, L., & Sammel, M. D. (2024). Reproducible research practices: A tool for effective and efficient leadership in collaborative statistics. *Stat*, 13(1), e653.

Gunn-Sandell, L. B., Bedrick, E. J., Hutchins, J.L., Berg, A. A., Kaizer, A. M., & Carlson, N. E. (2024). A practical guide to adopting Bayesian analyses in clinical research. *Journal of Clinical and Translational Science*, 8(1), e3.

Platt A, Truong T, Boulos M, Carlson NE, Desia M, Elam MM, Slade E, Hanlon AL, Hurst J, Olsen MK, Poisson LM, Rende L, Pomann G (2024). A guide to successful management of collaborative partnerships in quantitative research: An illustration of the science of team science” *Stat (in-press)*.



Year 2 Plans

- **Apply for RC2 funding for building better biostatistics and informatics teams**
- **Successfully launch CUBE**
- **Start grant writing bootcamps (also in the BERD but not discussed here)**
- **Successfully hire clinical teaching assistant professor to develop education objectives (just interviewed all the candidates)**
- **Successfully modify CoSPH promotion examples to increase the visibility of team science/collaboration and offer career paths for team scientists**



Response to EAC Critiques

1. Critique – *Develop partnerships with CSU*

Response: We have started conversations with CSU around bioinformatics and shared all of our administrative structure documents for them to model at CSU

2. Critique – *Continue BERD-Health Informatics partnerships*

Response: Have formalized a partnership and embedding team members into Health Data Compass to learn their processes and cross train. Working on an RC2 application together.



Questions for EAC

- 1. How are BERD and Health Informatics integrated at your institution?**
- 2. What are your thoughts on more integration of BERD and Health Informatics in the CCTSI?**
- 3. What are your thoughts on how we might operationalize/structure a BERD and Health Informatics integration?**

