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Genetic and seasonal determinants of vitamin D status in Confederated Salish and Kootenai Tribes (CSKT) participants

Jack W. Staples
University of Montana, Missoula, js226557@umconnect.umt.edu

Kathleen M. George
University of Montana, Missoula, Katie.George@mso.umt.edu

Rachel Dalton
University of Montana, Missoula, rachel.dalton@mso.umt.edu

Erin E. Ellerbeck
University of Montana, Missoula, erin.ellerbeck@mso.umt.edu

Genevieve Krause
University of Montana, Missoula, genevieve.krause@umconnect.umt.edu

See next page for additional authors

Authors' Names

Jack W. Staples, Kathleen M. George, Rachel Dalton, Erin E. Ellerbeck, Genevieve Krause, Tianna Lietch, Theresa Aliwarga, Matthew G. McDonald, Brian Phillips, LeeAnna I. Muzquiz, Deborah A. Nickerson, Timothy A. Thornton, Kenneth E. Thummel, and Erica L. Woodahl

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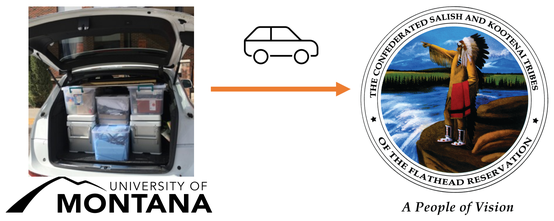
PRESENTER:

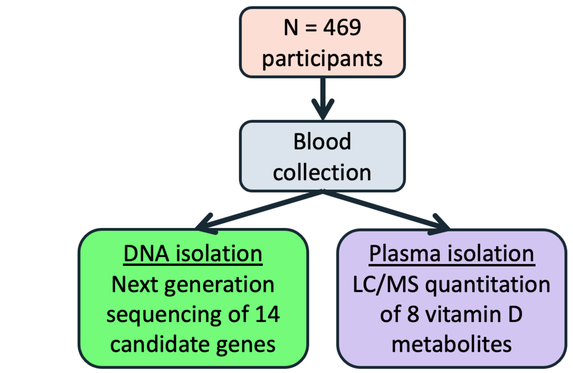
Jack Staples

jack.staples@umontana.edu

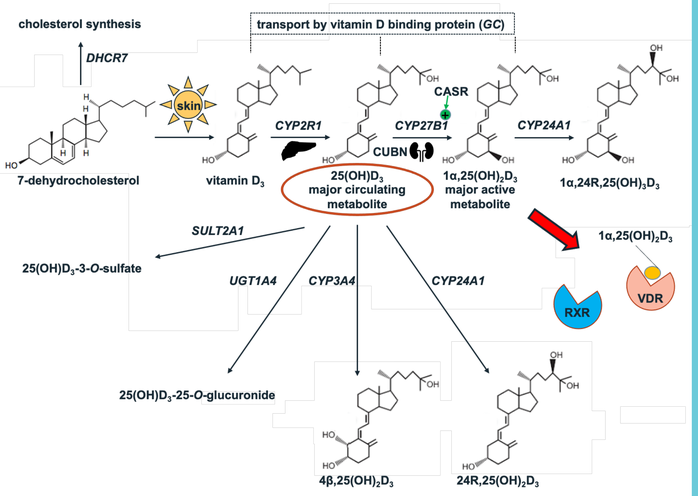
Background: Vitamin D levels vary globally in human populations due to genetics, geography, and other demographic factors (e.g., age, BMI, and gender). To improve our understanding of contributors to vitamin D levels, we conducted a **candidate-gene study** in partnership with the CSKT.

Methods: Our team traveled over 5,000 total miles to conduct this study.

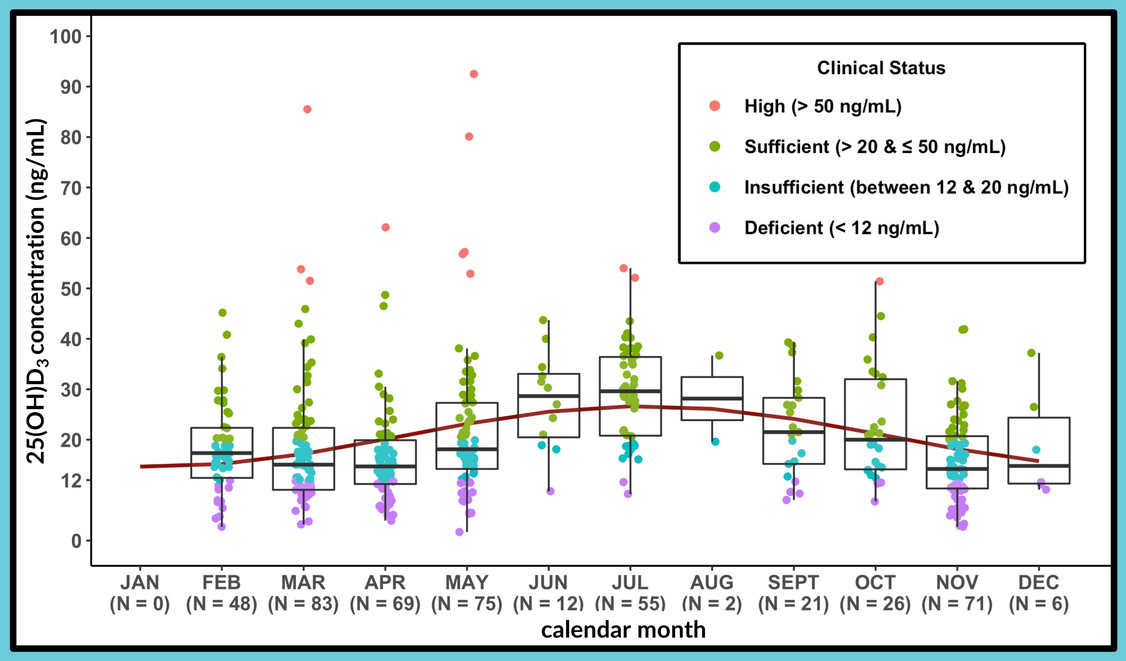




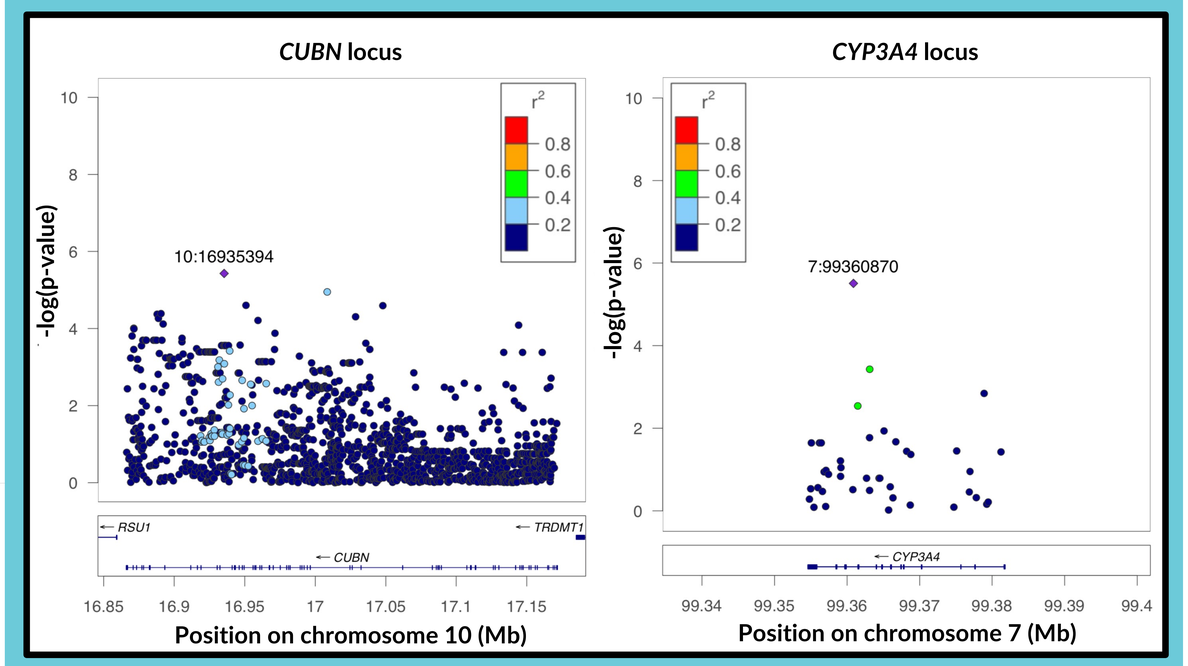
Vitamin D_3 regulatory pathway:



55% of CSKT had vitamin D levels below sufficiency (< 20 ng/mL)



4 variants in *CUBN* and 1 variant in *CYP3A4* were significantly associated with 25(OH)D_3 concentration



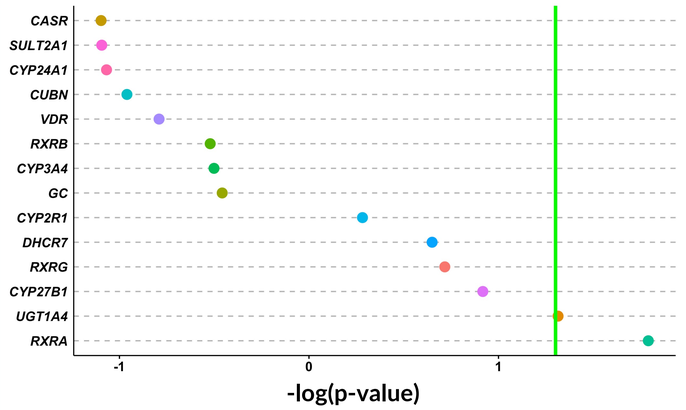
Take a picture to visit the Precision Medicine Project website!

Multivariate regression:
23% of 25(OH)D_3 variability explained

Variant or covariate	Beta ± S.E.	P-value
rs59819645 (*CUBN*)	-3.94 ± 1.08	**0.000307*** **
rs7089377 (*CUBN*)	-2.42 ± 0.696	**0.00056*** **
rs34859798 (*CUBN*)	1.72 ± 0.951	0.0713
rs77520345 (*CUBN*)	7.34 ± 2.54	**0.00398** **
rs4646440 (*CUBN*)	-3.28 ± 0.728	**8.33e-06*** **
Gender = Male	-2.01 ± 0.966	**0.0385***
Age	0.104 ± 0.0391	**0.00844** **
BMI	-0.239 ± 0.0734	**0.00125** **
Season = Sept.-Nov.	-8.5 ± 1.48	**1.63e-08*** **
Season = Dec.-Feb.	-10.3 ± 1.7	**3.24e-09*** **
Season = Mar.-May	-9.72 ± 1.44	**4.63e-11*** **

*p < 0.05, *p < 0.01, *p < 0.001

Pooled rare variant analysis of 25(OH)D sufficiency [25(OH)D < 20 ng/mL]:
significant associations in *UGT1A* and *RXRA*



Acknowledgements:

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UNIVERSITY OF MONTANA

THE CONFEDERATED SALISH AND KOOTENAI TRIBES OF THE FLATHEAD RESERVATION

A People of Vision

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