

## **Anil Sigdel, MS, PhD**

**Postdoctoral Researcher  
University of Pennsylvania**

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### **EDUCATION**

**Doctor of Philosophy • Animal Sciences..... transfer. Sep 2020 – May 2022**

*Dept. of Animal and Dairy Sciences, University of Wisconsin-Madison*

Dissertation: Developing novel genomic tools for reducing fetal loss and stillbirth  
in dairy cattle

**Doctor of Philosophy • Animal Sciences.....Aug. 2018 – Aug. 2020**

*Dept. of Animal Sciences, University of Florida*

**Master of Science • Animal Sciences.....Jan 2016 – May 2018**

*Dept. of Animal Sciences, University of Florida*

Thesis: Genetic analysis of heat tolerance for production, reproduction, and health  
traits in US Holstein cows

**Bachelor of Science • Veterinary Science & Animal Husbandry..... Aug 2009 – Nov 2014**

*Tribhuvan University, Kathmandu, Nepal*

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### **CAREER GOALS**

- Develop an innovative and collaborative research program to better understand the relationship between variation at the molecular level and relevant traits in livestock.
- Contribute to the professional development of the next generation of animal scientists and industry professionals.
- Deliver genomic tools to assist producers, breeders, artificial insemination companies to increase production efficiency while increasing profitability and sustainability of the animal agriculture.

## RESEARCH INTERESTS

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- Deliver development and application of computational and statistical methods for dissecting the genetic basis of economically important traits in livestock.
- Utilization of statistical, computational and bioinformatics methods for analyzing high dimensional data to predict genetic merit or yet-to-be observed phenotypes to increase production efficiency and product quality of livestock.

## PROFESSIONAL EXPERIENCE

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### **Postdoctoral Researcher.....June 2022 – Present**

School of Veterinary Medicine, University of Pennsylvania

- Advisor Dr. Gustavo Aguirre
- Projects with primary responsibility:
  - Investigate the genetic basis of inherited eye-disorders including cataract and retinal diseases.
  - Identify the genetic causes of inherited blindness including finding causal mutations to disease.

### **Graduate Research Assistant (PhD Candidate) .....Sep. 2020 – May 2022**

*Dept of Animal & Dairy Sciences, University of Wisconsin-Madison*

- Advisor Dr. Francisco Peñagaricano
- Project with primary responsibility:
  - Gene-mapping, gene-set analysis, and genomic prediction of fetal loss in US Holstein cattle

### **Intern ..... May 2021 – Aug. 2021**

*Council on Dairy Cattle Breeding, Bowie, Maryland*

- Advisors: Dr. Nick Wu & Dr. Kristen Parker Gaddis
- Project with primary responsibility
  - Genetic evaluations of stillbirth in five US dairy breeds – A historical data-oriented feasibility study

### **Graduate Research Assistant (PhD Student)..... Aug. 2018 – Aug. 2020**

*Dept. of Animal Sciences, University of Florida*

- Advisor Dr. Francisco Peñagaricano

- Project assisting international visiting scholars in the lab.
  - Genetic effects of heat stress on milk fatty acids in a Brazilian Holstein cattle
  - Direct, indirect, and pleiotropic genetic effects associated with calving ease, retained placenta, and metritis in US Holstein cows.

**Graduate Research Assistant (MS Student) .....Jan 2016 – May 2018**

Dept. of Animal Sciences, University of Florida

- *Advisor: Dr. Francisco Peñagaricano*
- Project with primary responsibility
  - Genetic evaluation of milk production and reproduction traits under heat stress conditions in US Holstein cows
  - Genetic evaluation of post-partum health traits in US Holstein cattle

## **TEACHING EXPERIENCE**

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**T.A.** in the graduate course: Applied Statistics in Animal Sciences

- Supervisor: Dr. Francisco Peñagaricano (Fall 2017, Fall 2018, 4 credits, class size: approx. 15 students)
- Design labs, grade papers and projects
- Statistical consulting on generalized linear models and experimental designs during office hours.

**T.A.** in the undergraduate courses: Introduction to Animal and Veterinary Genetics & Principles of Animal Breeding

- Supervisor: Dr. Guilherme Rosa (Spring 2021, 3 credits, class size: approx. 50 students)
- Grade homework, exams, and lab-works of undergraduate students
- Answer questions students may have during office hours

## SCHOLARSHIP AND AWARDS

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**Department of Animal Sciences Teaching Award .....November 2019**

- *Dept. of Animal Sciences, University of Florida*

**Department of Animal Sciences Top-up Award .....October 2019**

- *Dept. of Animal Sciences, University of Florida*

**IFAS Dean's Office Top-Up Award .....November 2019**

- *Dean's office, IFAS, University of Florida*

**Grinter Fellowship Award .....September 2018**

- *Graduate school, University of Florida*

**William C. and Bertha M. Cornett Fellowship .....August 2018**

- *College of Ag. & Life Sciences, University of Florida*

**University of Florida Animal Sciences Matching Fellowship .....2018-2020**

- *Awarded to a PhD student in the Animal Sciences program at the University of Florida to partially fund (50%) tuition and stipend.*

**University of Florida Animal Sciences Matching Fellowship .....2018-2020**

- *Awarded to a MS student in the Animal Sciences program at the University of Florida to partially fund (50%) tuition and stipend.*

## TRAVEL AWARDS

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**Travel Grant to attend Association for Research in Vision and**

**Ophthalmology (ARVO) annual meeting.....2023**

**New Orleans, Louisiana**

- *Penn Postdoc Association Presidential Travel Award, University of Pennsylvania \$500.00*

**Travel Grant to attend 11<sup>th</sup> World Congress on Genetics**

**applied to Livestock Production.....2018**

**Auckland, New Zealand**

- *Institute of food & Agricultural Sciences, University of Florida \$350.00*
- *Graduate Student Council, University of Florida \$250.00*

## PEER-REVIEWED ARTICLES

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### (First Author)

1. **Sigdel, A.**, Bisinotto, R.S., and Peñagaricano, F. (2021). Genetic analysis of fetal loss in Holstein Cattle. *Journal of Dairy Science* 105, 9012-9020
2. **Sigdel, A.**, N. Wu, K. P. Gaddis, D. Norman, J. A. Carrillo, J. Burchard, F. Peñagaricano and J. Dürr. Genetic evaluations of stillbirth for five United States dairy breeds: A data-resource feasibility study. *Frontiers in Genetics* 13.
3. **Sigdel, A.**, Bisinotto, R.S., and Peñagaricano, F. (2021). Genes and pathways associated with pregnancy loss in dairy cattle. *Scientific Reports* 11, 13329.
4. **Sigdel, A.**, Liu, L., Abdollahi-Arpanahi, R., Aguilar, I., and Peñagaricano, F. (2020). Genetic dissection of reproductive performance of dairy cows under heat stress. *Animal Genetics* 51, 511-520.
5. **Sigdel, A.**, Abdollahi-Arpanahi, R., Aguilar, I., and Peñagaricano, F. (2019). Whole genome mapping reveals novel genes and pathways involved in milk production under heat stress in US Holstein cows. *Frontiers in Genetics* 10
6. **Sigdel, A.**, Bhattarai, N., Kolachhapati, M.R. and Paudyal S. (2015). Estimation of genetic parameters for productive traits of Murrah buffaloes in Kaski, Nepal. *International Journal of research*, 2(5)
7. **Sigdel, A.**, Bhattarai, N., and Kolachhapati, M.R. (2015). Impacts of climate change on milk production of Murrah buffaloes in Kaski, Nepal. *Proceedings of International Conference on Climate Change Innovation and Resilience for Sustainable livelihood*, 12-14 January 2015, Kathmandu, Nepal
8. **Sigdel A.**, Kolachhapati. M.R., and Bhattarai N. (2014). Effect of non-genetic factors on productive traits of Murrah buffaloes. *Nepalese Journal of Agricultural Sciences* 12: 148-152

### (Contributing Author)

1. Dauria, B.D., **Sigdel, A.**, Petrini, J., Bóscollo, P.P., Pilonetto, F., Salvian, M., Rezende F.M., Pedrosa V.B., Bittar, C.M.M., Machado P.F., Coutinho L.L., Wiggans G.R. and G.B. Mourão (2022). Genetic effects of heat stress on milk fatty acids in a Brazilian Holstein cattle. *Journal of Dairy Science* 105, 3296-3305
2. Bhattarai, N., Poudel, J., Kolakshyapati, M.R., Sharma, M.P., Gorkhali, N.A., Sigdel, A., Upadhayaya, S., and Sapkota, S. (2022). Evaluation of reproductive performance and litter traits of Khari, Jamunapari and Sirohi crossbred goats in Surkhet district of Karnali province, Nepal. *Journal of Agriculture and Forestry University* 71-80
3. Pandey, A., Devkota, A., **Sigdel, A.**, Yadegari, Z., Dumenyo, K. and Taheri, A. (2021). Citric acid/ $\beta$ -alanine carbon dots as a novel tool for delivery of plasmid DNA into *E.coli* cells. *Scientific Reports* 11. 23964.

4. Sah, K., Karki, P., Shrestha, R.D., **Sigdel, A.**, Adesogan, A.T., and Dahl, G.E. (2020). MILK Symposium review: Improving control of mastitis in dairy animals in Nepal\*. Journal of Dairy Science 103,9740-9747
5. Vatankhah, M., **Sigdel, A.**, and Abdollahi-Arpanahi, R. (2019). Population structure of Lori-Bakhtiari sheep in Iran by pedigree analysis. Small Ruminant Research 174, 148-155
6. Pacheco, H.A., Da Silva, S., **Sigdel, A.**, Mak, C.K., Galvão, K.N., Texeira, R.A., Dias, L.T., and Peñagaricano, F. (2018). Gene mapping and gene-set analysis for milk fever incidence in Holstein dairy cattle. Frontiers in Genetics, 9.

## SCIENTIFIC MEETING ABSTRACTS

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1. Murgiano, L., **Sigdel, A.**, Niggel, J.K., and Aguirre, G.D. Phenotypic assessment and genetic dissection of cataracts in American Cocker Spaniel. International Conference on Canine and Feline genetics and genomics. Huntsville Alabama, October 2-5, 2022
2. **Sigdel, A.**, Bisinotto, R.S., and Peñagaricano, F. Genomic prediction of fetal loss in US Holstein cattle. American Dairy Science Association Annual Meeting. Kansas City, Missouri, June 19-22, 2022
3. **Sigdel, A.**, Bisinotto, R.S., and Peñagaricano, F. Genes and pathways associated with pregnancy loss in dairy cattle. American Dairy Science Association Virtual Annual Meeting. July 11-14, 2021
4. **Sigdel, A.**, Bisinotto, R.S., and Peñagaricano, F. Alternative models for genetic analysis of fetal loss in dairy cattle. American Dairy Science Association Virtual Annual Meeting. June 22-24, 2020
5. Teixeira, R.A., Dias, L.T., **Sigdel, A.**, and Peñagaricano, F. Direct, indirect and pleiotropic genetic effects associated with calving ease, retained placenta and metritis in US Holstein cows. American Dairy Science Association Virtual Annual Meeting. June 22-24, 2020
6. **Sigdel, A.**, Vaca, A., Abdollahi-Arpanahi, R., Aguilar, I., and Peñagaricano, F. Genetic analysis of heat tolerance for conception rate in US Holstein cows. American Dairy Science Association Annual Meeting. Knoxville, Tennessee, June 24-27, 2018
7. Pacheco, H.A., Da Silva, S., **Sigdel, A.**, Mak, C.K., Galvão, K.N., Teixeira, R.A., Dias, L.T., and Peñagaricano, F. Gene mapping and gene-set analysis for milk fever in Holstein dairy cattle. American Dairy Science Association Annual Meeting. Knoxville, Tennessee, June 24-27, 2018
8. **Sigdel, A.**, Liu, L., Abdollahi-Arpanahi, R., Aguilar, I., and Peñagaricano, F. Genetic analysis of heat tolerance for production and health traits in US Holstein cows. XI World Congress on Genetics Applied to Livestock Production. Auckland, New Zealand. February, 11-16, 2018
9. **Sigdel, A.**, Mak, C.K., Galvão, K.N., Teixeira, R.A., Dias, L.T., and Peñagaricano, F. Genome wide association study for clinical mastitis, metritis and ketosis in US Holstein cattle. American Dairy Science Association Annual Meeting, June 25-28, 2017

## PROFESSIONAL SERVICE

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- ✦ Ad-hoc reviewer, Frontiers in Genetics (2021 – present)
- ✦ Ad-hoc reviewer, Frontiers in Microbiology (2021 – present)
- ✦ Ad-hoc reviewer, Animals (2021 – present)
- ✦ Ad-hoc reviewer, PeerJ (2021 – present)



## **PROFESSIONAL MEMBERSHIP**

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- ✦ Member, American Dairy Science Association, 2016-present

## **PROFESSIONAL DEVELOPMENT CONFERENCES**

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- ✦ 2022 International conference on canine and feline genetics and genomics – Huntsville, Alabama
- ✦ 2021 ADSA Annual Meeting – Virtual Meeting
- ✦ 2020 ADSA Annual Meeting – Virtual Meeting
- ✦ 2019 ADSA Annual Meeting – Cincinnati, OH
- ✦ 2018 ADSA Annual Meeting – Knoxville, TN
- ✦ 2018 World Congress on Genetics Applied to Livestock Production – Auckland, New Zealand
- ✦ 2017 ADSA Annual Meeting – Pittsburgh, PA