

# Pacific Symposium on Biocomputing 2020

January 3-7, 2020

Big Island of Hawaii

Program Book



## PACIFIC SYMPOSIUM ON BIOCOMPUTING 2020

*Big Island of Hawaii, January 3-7, 2020*

Welcome to PSB 2020!

We have prepared this program book to give you quick access to information you need for PSB 2020.

Enclosed you will find:

- Logistics information
- Medical services information
- Full conference schedule (see website for the latest version)
- Agendas for workshops and JBrowse demo
- Call for Session and Workshop Proposals for PSB 2021
- Poster/abstract titles and author index
- Participant list

The latest conference materials are available online at

<http://psb.stanford.edu/conference-materials/>.

PSB 2020 gratefully acknowledges the support of the Cleveland Institute for Computational Biology; UPenn Institute for Biomedical Informatics; Variant Bio; Penn Center for Precision Medicine, Penn Medicine; CIPHEROME; Translational Bioinformatics Conference (TBC); the National Institutes of Health (NIH); and the International Society for Computational Biology (ISCB). If you or your institution are interested in sponsoring, PSB, please contact Tiffany Murray at [psb.hawaii@gmail.com](mailto:psb.hawaii@gmail.com)

If you have any questions, the PSB registration staff (Tiffany Murray, Kasey Miller, BJ Morrison-McKay, and Cindy Paulazzo) are happy to help you.

Aloha!

Russ Altman  
Keith Dunker  
Larry Hunter  
Teri Klein  
Maryln Ritchie

The PSB 2020 Organizers

## PACIFIC SYMPOSIUM ON BIOCUMPING 2020

*Big Island of Hawaii, January 3-7, 2020*

### **SPEAKER INFORMATION**

Oral presentations of accepted proceedings papers will take place in Salon 2 & 3. ***Speakers are allotted 10 minutes for presentation and 5 minutes for questions for a total of 15 minutes. Instructions for uploading talks were sent to authors with oral presentations.*** If you need assistance with this, please see Tiffany Murray or another PSB staff member.

### **POSTER INFORMATION**

**Please set up your poster upon arrival and remove it by Monday, January 6 at 5:30pm.**

Please use the easel marked with the same number that your poster abstract has been assigned in abstract book (e.g., if your abstract is on page 50 of the book, use the easel marked #50). Once your poster is displayed, please make sure that the number is still visible.

The poster session is centered around lunch. Please eat, talk, and network.

**The poster session is on Sunday, January 5 12:45-2:30.**

12:45-2:00: Food available; drinks served until 2:30.

1:00-1:45: Posters on ODD numbered boards presented.

1:45-2:30: Posters on EVEN numbered boards presented.

### **INTERNET CONNECTIVITY**

***Please help keep the PSB wireless network stable: Do not download large data files due to limited bandwidth.***

PSB is connected to the Internet via a secure wireless network for the conference. For transferring your data/presentations or technical difficulties with the network, please see PSB IT/AV staff members Al Conde, Ryan Whaley, or Paul Murray.

To connect to the PSB wireless network, you will need to explicitly join the "PSB" SSID, and use the passphrase "orcpsb123" with WPA2-Personal security type and AES encryption.

PSB's wireless Internet access (802.11b/g/n) is available in the Salons 1, 2, 3, the Plaza Ballroom, and the Ballroom Courtyard of the Fairmont Orchid.

# PACIFIC SYMPOSIUM ON BIOCOMPUTING 2020

*Big Island of Hawaii, January 3-7, 2020*

## PSB 2020 HOSTED RECEPTIONS & MEALS

### Friday, January 3

5:00-6:00pm 25th Anniversary Reception, Croquet Lawn  
*Sponsored by the Cleveland Institute for Computational Biology*

### Saturday, January 4

7:30-8:45am Continental Breakfast, Ballroom Courtyard  
12:00-1:15pm PSB Hosted Lunch, Ballroom Courtyard

### Sunday, January 5

7:30-8:45am Continental Breakfast, Ballroom Courtyard  
12:45-2:00pm Poster Session with Lunch, Salon 1 and Ballroom Courtyard

### Monday, January 6

7:30-8:45am Continental Breakfast, Ballroom Courtyard  
5:30-7:00pm Dinner Banquet, Coconut Grove  
7:00-7:30pm 25<sup>th</sup> Anniversary Celebration Dessert, Ballroom Courtyard

### Tuesday, January 7

7:30-8:30am Continental Breakfast, Ballroom Courtyard

*If you would like to buy meal or dinner tickets for your guest/s, please see the PSB registration staff.*

### **Meal tickets for Non-Participants/Guests**

- All Meals: \$550 adults; \$275 children 6-12 years
- Banquet Ticket Only: \$150 adults; \$75 children 6-12 years
- Welcome Reception & Banquet Only: \$180 adults; \$85 children 6-12 years

**Please remember to wear your PSB nametag & lanyard at all PSB functions.**

Enjoy the conference!



The safety and well-being of our guests and colleagues is our primary concern. We have listed below local organizations that we partner with to ensure that everyone is well taken care of during their time here at the Fairmont Orchid.

**Fairmont Orchid**

One North Kaniku Drive, Kohala Coast, Hawaii 96743  
Telephone Number: (808) 885-2000

**Medical Service and Facilities:**

Waimea Urgent Care (30 minutes)

65-1230 Mamalahoa Highway, Suite A10, Kamuela, Hawaii 96743

Hours: Mon – Fri 8:30am - 7:00 pm / Sat 8:00am - 4:00pm

Capable of handling non-emergency care up to and including sutures

Closest Hospital: North Hawaii Community Hospital (30 minutes)

Mamalahoa Highway, Route 190, Kamuela, Hawaii 96743

Level III Trauma Center

(808) 881-4730 (ER) (808) 885-4444 (General)

Closest Pharmacy: Waikoloa Village Market Pharmacy

68-3916 Paniolo Ave

Waikoloa Village, Hawaii 96738

Direct: (808) 883-8434 Fax: (808) 883-8540

Hours: 9am - 6pm Monday - Friday, 9:30am – 1:30pm Saturday, closed Sunday

The **Fairmont Orchid Security Staff** consists of a minimum of three Security Officers on each shift, providing 24-hour coverage for the resort property. The Security Staff is trained and certified in First Aid, CPR and A.E.D. Security patrols are conducted on a continuous basis throughout the resort. All patrols are radio dispatched.

The resort has in place an emergency team of A.E.D. (Automatic External Defibrillator) certified users in the event of sudden cardiac arrest. The team is trained in its use in conjunction with cardio pulmonary resuscitation. We have 6 A.E.D.s throughout the property so full coverage of the property is more easily maintained.

**Security**

- Electronic locks for guestrooms
- Secondary locking device for entry, balcony and connecting guestroom doors
- Entry door viewer
- Self closing guestroom entry door
- 24 hour Security, extension 7600 (non-emergencies)
- 24 hour Emergency Hotline, extension “66” from any house phone
- Security cameras are provided in public areas

# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

January 3-7, 2020, Big Island of Hawaii

## Friday, January 3, 2020

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### Registration

7:30-9:30	Registration	Ballroom Prefunction
12:00-2:00	Registration	Ballroom Prefunction
5:00-5:30	Registration	Croquet Lawn

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### Workshops 1 & 2

9:00-12:00	<b>AI Ethics and Values in Biomedicine – Technical Challenges and Solutions</b>	Salon 2&3
	Organizers: Dragutin Petkovic, Lester Kobzik, Reza Ghanadan	
9:00-12:00	<b>Packaging Biocomputing Software to Maximize Distribution and Reuse</b>	Plaza
	Organizers: William S. Bush, Nicholas Wheeler, Brett Beaulieu-Jones, Christian Darabos	

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### Break

12:00-1:30	Lunch on own
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### Workshop 3

1:30-4:30	<b>Navigating Ethical Quandaries with the Privacy Dilemma of Biomedical Datasets</b>	Salon 2&3
	Organizers: Gamze Gursoy, Megan Doerr, Steven E. Brenner, Haixu Tang, John Wilbanks, Jennifer K. Wagner	

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### Birds of a Feather Working Group Meeting (all invited)

1:30-3:00	<b>JBrowse – Hands-On Session</b>	Plaza
	Organizer: Ian Holmes	

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### Break

4:30-5:00	Break
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### Reception

5:00-6:00	25 <sup>th</sup> Anniversary Reception including PSB group photo Sponsored by the Cleveland Institute for Computational Biology	Croquet Lawn
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### Break

6:00-	Dinner & Evening on own
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*Please wear your PSB name tag and lanyard for admission to all events and hosted meals.*

December 19, 2019

# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

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## Saturday, January 4, 2020

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### Registration

7:30-9:00	Registration	Ballroom Prefunction
10:30-11:30	Registration	Ballroom Prefunction
12:00-1:00	Registration	Ballroom Prefunction

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### Breakfast

7:30-8:45	PSB Breakfast	Ballroom Courtyard
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### Welcome

8:30-8:40	Welcome	Salon 2&3
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### Session 1

Salon 2&3

#### **Artificial Intelligence for Enhancing Clinical Medicine**

Co-chairs: Roxana Daneshjou, Olga Afanasiev, Lukasz Kidziński, Jonathan Chen

8:40-8:50	Introduction
8:50-9:05	<i>Robustly Extracting Medical Knowledge from EHRs: A Case Study of Learning a Health Knowledge Graph</i> <u>Irene Y. Chen</u> , Monica Agrawal, Steven Horng, David Sontag
9:05-9:20	<i>Predicting Longitudinal Outcomes of Alzheimer's Disease via a Tensor-Based Joint Classification and Regression Model</i> Lodewijk Brand, Kai Nichols, <u>Hua Wang</u> , Heng Huang, Li Shen, for the ADNI
9:20-9:35	<i>Monitoring ICU Mortality Risk with a Long Short-Term Memory Recurrent Neural Network</i> <u>Ke Yu</u> , Mingda Zhang, Tianyi Cui, Milos Hauskrecht
9:35-9:50	<i>Addressing the Credit Assignment Problem in Treatment Outcome Prediction Using Temporal Difference Learning</i> <u>Sahar Harati</u> , Andrea Crowell, Helen Mayberg, Shamim Nemati
9:50-10:05	<i>From Genome to Phenome: Predicting Multiple Cancer Phenotypes Based on Somatic Genomic Alterations via the Genomic Impact Transformer</i> <u>Yifeng Tao</u> , Chunhui Cai, William W. Cohen, Xinghua Lu
10:05-10:20	<i>Automated Phenotyping of Patients with Non-Alcoholic Fatty Liver Disease Reveals Clinically Relevant Disease Subtypes</i> <u>Maxence Vandromme</u> , Tomi Jun, Ponni Perumalswami, Joel T. Dudley, Andrea Branch, Li Li
10:20-10:35	<i>Increasing Clinical Trial Accrual via Automated Matching of Biomarker Criteria</i> <u>Jessica W. Chen</u> , Christian A. Kunder, Nam Bui, James L. Zehnder, Helio A. Costa, Henning Stehr

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### Break

10:35-10:50	Break
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# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

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## Saturday, January 4, 2020 continued

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Keynote Salon 2&3

10:50-12:00 ***Building the FAIR Research Commons for Life Sciences: the pain, the glory***

Carole Goble with introduction by Larry Hunter

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Lunch Ballroom Courtyard

12:00-1:15 PSB Hosted Lunch

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Workshop 4 Salon 2&3

1:30-4:30 **Translational Bioinformatics Workshop: Biobanks in the Precision Medicine Era**

Co-chairs: Marylyn Ritchie, Jason Moore, Ju Han Kim

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Break

4:30- Dinner & Evening on own

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*December 19, 2019*



# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

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## Sunday, January 5, 2020

<b>Registration</b>		<b>Ballroom Prefunction</b>
7:30-8:30	Registration	
<b>Breakfast</b>		<b>Ballroom Courtyard</b>
7:30-8:45	PSB Breakfast	
<b>Announcements</b>		<b>Salon 2&amp;3</b>
8:30-8:40	Morning Announcements	
<b>TERI Talks</b>		<b>Salon 2&amp;3</b>
8:40-9:10	Steven Brenner, University of California, Berkeley	
9:10-9:40	Greg Hampikian, Boise State University	
<b>Session 2</b>		<b>Salon 2&amp;3</b>
	<b>Precision medicine: addressing the challenges of sharing, analysis, and privacy at scale</b>	
	Co-chairs: Steven E. Brenner, Martha V. Bulyk, Dana C. Crawford, Alexander A. Morgan, Predrag Radivojac, Nicholas Tatonetti	
9:45-9:55	Introduction	
9:55-10:15	Invited Talk: Kristin Lauter	
10:15-10:30	<i>Integrated Cancer Subtyping using Heterogeneous Genome-Scale Molecular Datasets</i> Suzan Arslanturk, <u>Sorin Draghici</u> , Tin Nguyen	
10:30-10:45	<i>Assessment of coverage for endogenous metabolites and exogenous chemical compounds using an untargeted metabolomics platform</i> <u>Sek Won Kong</u> , Carles Hernandez-Ferrer	
10:45-11:00	<i>Coverage profile correction of shallow-depth circulating cell-free DNA sequencing via multi-distance learning</i> <u>Nicholas B. Larson</u> , Melissa C. Larson, Jie Na, Carlos P. Sosa, Chen Wang, Jean-Pierre Kocher, Ross Rowsey	
11:00-11:15	<i>PGxMine: Text mining for curation of PharmGKB</i> <u>Jake Lever</u> , Julia M. Barbarino, Li Gong, Rachel Huddart, Katrin Sangkuhl, Ryan Whaley, Michelle Whirl-Carrillo, Mark Woon, Teri E. Klein and Russ B. Altman	
11:15-11:30	Break	
11:30-11:45	<i>The power of dynamic social networks to predict individuals' mental health</i> <u>Shikang Liu</u> , David Hachen, Omar Lizardo, Christian Poellabauer, Aaron Striegel, Tijana Milenkovic	
11:45-12:00	<i>Implementing a Cloud Based Method for Protected Clinical Trial Data Sharing</i> <u>Gaurav Luthria</u> , <u>Qingbo Wang</u>	
12:00-12:15	<i>Pathway and network embedding methods for prioritizing psychiatric drugs</i> <u>Yash Pershad</u> , Margaret Guo, Russ B. Altman	

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# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

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## Sunday, January 5, 2020 continued

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12:15-12:30 *Robust-ODAL: Learning from heterogeneous health systems without sharing patient-level data*

Jiayi Tong, Rui Duan, Ruowang Li, Martijn J. Scheuemie, Jason H. Moore, Yong Chen

12:30-12:45 *Computationally efficient, exact, covariate-adjusted genetic principal component analysis by leveraging individual marker summary statistics from large biobanks*

Jack Wolf, Martha Barnard, Xueting Xia, Nathan Ryder, Jason Westra, Nathan Tintle

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### Poster Session Lunch

Salon 1 and Ballroom Courtyard

12:45-2:30 Poster Session with Lunch (food available 12:45-2:00; drinks until 2:30)  
(Posters on ODD numbered boards presented from 1:00-1:45)  
(Posters on EVEN numbered boards presented from 1:45-2:30)

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### Discussion Session

Salon 2&3

2:30-4:30 Joint Discussion Session: Artificial Intelligence for Enhancing Clinical Medicine and Precision medicine: addressing the challenges of sharing, analysis, and privacy at scale

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### Parasite & Symbiont Awards

Salon 2&3

4:30-5:00 **Parasite & Symbiont Awards**

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### Break

5:00- Dinner and evening on own

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# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

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## Monday, January 6, 2020

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Breakfast Ballroom Courtyard

7:30-8:45 PSB Breakfast

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Announcements Salon 2&3

8:30-8:40 Morning Announcements

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Session 3 Salon 2&3

### **Pattern Recognition in Biomedical Data: Challenges in Putting Big Data to Work**

Co-chairs: Brett Beaulieu-Jones, Christian Darabos, Dokyoon Kim, Shilpa Kobren, Anurag Verma

8:40-8:50 Introduction

8:50-9:10 Invited Talk: Gabriel Brat

9:10-9:25 *Clinical Concept Embeddings Learned from Massive Sources of Multimodal Medical Data*

Andrew L. Beam, Benjamin Kompa, Allen Schmaltz, Inbar Fried, Griffin Weber, Nathan Palmer, Xu Shi, Tianxi Cai, Isaac S. Kohane

9:25-9:40 *PAGE-Net: Interpretable and Integrative Deep Learning for Survival Analysis Using Histopathological Images and Genomic Data*

Jie Hao, Sai Chandra Kosaraju, Nelson Zange Tsaku, Dae Hyun Song, Mingon Kang

9:40-9:55 *Microvascular Dynamics from 4D Microscopy Using Temporal Segmentation*

Shir Gur, Lior Wolf, Lior Golgher, Pablo Blinder

9:55-10:10 *Assessment of Imputation Methods for Missing Gene Expression Data in Meta-Analysis of Distinct Cohorts of Tuberculosis Patients*

Carly A. Bobak, Lauren McDonnell, Matthew D. Nemesure, Justin Lin, Jane E. Hill

10:10-10:25 *Using Transcriptional Signatures to Find Cancer Drivers with LURE*

David Haan, Ruikang Tao, Verena Friedl, Ioannis N Anastopoulos,

Christopher K Wong, Alana S Weinstein, Joshua M Stuart

10:25-10:40 *Two-stage ML Classifier for Identifying Host Protein Targets of the Dengue Protease*

Jacob T. Stanley, Alison R. Gilchrist, Alex C. Stabell, Mary A. Allen, Sara L. Sawyer, Robin D. Dowell

10:40-11:00 Break

11:00-11:15 *Machine learning algorithms for simultaneous supervised detection of peaks in multiple samples and cell types*

Toby Dylan Hocking, Guillaume Bourque

11:15-11:30 *Graph-based information diffusion method for prioritizing functionally related genes in protein-protein interaction networks*

Minh Pham, Olivier Lichtarge

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# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

January 3-7, 2020, Big Island of Hawaii

## Monday, January 6, 2020 continued

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11:30-11:45 *A Literature-Based Knowledge Graph Embedding Method for Identifying Drug Repurposing Opportunities in Rare Diseases*  
Daniel N. Sosa, Alexander Derry, Margaret Guo, Eric Wei, Connor Brinton, Russ B. Altman

11:45-12:00 *Enhancing Model Interpretability and Accuracy for Disease Progression Prediction via Phenotype-Based Patient Similarity Learning*  
Yue Wang, Tong Wu, Yunlong Wang, Gao Wang

12:00-12:15 *Towards identifying drug side effects from social media using active learning and crowd sourcing*  
Sophie Burkhardt, Julia Siekiera, Josua Glodde, Miguel A. Andrade-Navarro, Stefan Kramer

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### Break

12:15-2:00 Lunch on Own

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### Discussion Session

Plaza

2:00-3:00 **Pattern Recognition in Biomedical Data: Challenges in Putting Big Data to Work**

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### Session 4

Salon 2&3

#### **Mutational Signatures: Etiology, Properties and Role in Cancer**

Co-chairs: Max Leiserson, Teresa Przytycka, Roded Sharan

3:00-3:10 Introduction

3:10-3:30 Invited Talk: Ludmil Alexandrov

3:30-3:45 *DNA Repair Footprint Uncovers Contribution of DNA Repair Mechanism to Mutational Signatures*

Damian Wojtowicz, Mark D.M. Leiserson, Roded Sharan, Teresa M. Przytycka

3:45-4:00 *TrackSigFreq: Subclonal Reconstructions Based on Mutation Signatures and Allele Frequencies*

Caitlin F Harrigan, Yulia Rubanova, Quaid Morris, Alina Selega

4:00-4:15 *PhySigs: Phylogenetic Inference of Mutational Signature Dynamics*  
Sarah Christensen, Mark D.M. Leiserson, Mohammed El-Kebir

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### Discussion Session

Salon 2&3

4:15-5:15 **Mutational Signatures**

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### Dinner

Coconut Grove

5:30-7:00 PSB Dinner Banquet

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### Dessert

Ballroom Courtyard

7:00-7:30 25<sup>th</sup> Anniversary Celebration Dessert

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### Keynote

Salon 2&3

7:30-8:30 ***Valid or Invalid?: Genetic Data as part of Workplace Wellness Programs***

Ifeoma Ajunwa with introduction by Marylyn Ritchie

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# Pacific Symposium on Biocomputing (PSB) 2020 Schedule

January 3-7, 2020, Big Island of Hawaii

## Tuesday, January 7, 2020

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<b>Breakfast</b>		<b>Ballroom Courtyard</b>
7:30-8:30	Breakfast	
<b>Closing</b>		<b>Salon 2&amp;3</b>
8:30-8:40	Closing Announcements	
<b>TERI Talks</b>		<b>Salon 2&amp;3</b>
8:40-9:10	Roxana Daneshjou, Stanford University	
9:10-9:40	Jonathan Haines, Case Western Reserve University	
<b>Session 5</b>		<b>Salon 2&amp;3</b>
	<b>Intrinsically Disordered Proteins (IDPs) and Their Functions</b>	
	Co-chairs: A. Keith Dunker, Lukasz Kurgan, Predrag Radivojac, Joel L. Sussman	
9:45-9:55	Introduction	
9:55-10:15	Invited Talk: Lukasz Kurgan	
10:15-10:30	<i>Disordered Function Conjunction: On the in-silico function annotation of intrinsically disordered regions</i> Sina Ghadermarzi, Akila Katuwawala, Christopher J. Oldfield, Amita Barik, <u>Lukasz Kurgan</u>	
10:30-10:45	<i>De novo ensemble modeling suggests that AP2-binding to disordered regions can increase steric volume of Epsin but not Eps15</i> N. Suhas Jagannathan, Christopher W. V. Hogue, <u>Lisa Tucker-Kellogg</u>	
10:45-11:00	<i>Modulation of p53 transactivation domain conformations by ligand binding and cancer-associated mutations</i> Xiaorong Liu, <u>Jianhan Chen</u>	
11:00-11:15	<i>Exploring relationships between the density of charged tracts within disordered regions and phase separation</i> <u>Ramiz Somjee</u> , Diana M. Mitrea, Richard W. Kriwacki	
<b>Discussion Session</b>		<b>Salon 2&amp;3</b>
11:15-12:15	<b>Intrinsically Disordered Proteins (IDPs) and Their Functions</b>	

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***PSB over--see you next year!***

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# **Workshop: AI Ethics and Values in Biomedicine—Technical Challenges and Solutions**

Updated: 12/30/19

**Organizers: Dragutin Petkovic, Lester Kobzik, Reza Ghanadan**

**Friday 01/03/2020  
9:00-12:00**

**Salon 2&3**

**9:00 - 9:20 Welcome and Introduction – D. Petkovic**

**9:20 – 9:45 Social Biases: Propagation and Creation through Predictive Models,  
Claudia Perlich, Senior Data Scientist, Two Sigma; Stern NYU**

**9:45 – 10:10 Stories from the Sewer: A Call to Improve How We Shape Training Sets  
Chris Re, Computer Science, Stanford University**

**10:10 - 10:35 Detecting Bugs in Machine Learning Models Using Data Perturbations  
Sameer Singh, Information and Computer Science, UC Irvine**

**10:35 - 10:50 BREAK**

**10:50 – 11:15 I’m not biased, I’m a computer. Trust me (at your own peril)  
Jessica Tenenbaum, Biostatistics and Bioinformatics, Duke University**

**11:15 – 11:55 Moderated Panel discussion with speakers as panelists  
Moderators: L. Kobzik and D. Petkovic**

**11:55 - 12:00 Discussion summary by workshop moderators**

# PACKAGING BIOCOMPUTING SOFTWARE TO MAXIMIZE DISTRIBUTION AND REUSE

PSB Tutorial Workshop

January 3<sup>rd</sup>, 2020 9:00-12:00 in Plaza Ballroom

## Agenda

9:00 – 9:10	Install Software and Group Introductions	<i>Will Bush</i>
9:10 – 9:20	Intro and Overview of Software Packaging, Distribution, and Its Importance	<i>Will Bush</i>
9:20 – 10:05	Intro to Jupyter Notebooks	<i>Christian Darabos</i>
10:05 – 10:50	R Packages and CRAN Submission	<i>Nicholas Wheeler</i>
10:50 – 11:35	Creating a Reproducible Computing Environment	<i>Brett Beaulieu-Jones</i>
11:35 – 12:00	Distribution and Version Control	<i>Everyone</i>

# **Navigating Ethical Quandaries with the Privacy Dilemma of Biomedical Datasets**

**January 3, 2020 1:30-4:30pm in Salon 2&3**

1:30 – 1:50 Introduction (Meg Doerr and Gamze Gursoy)

1:50 – 2:10 John Wilbanks: Translational bioethics in a monopoly network era

2:10 – 2:30 Jennifer Wagner: Legal Angles and the 'Illusion' of Certainty: Regulation of Diverse Data Sets

2:30 – 2:50 Heidi Sofia: Advancing data sharing with security and privacy at NIH

2:50 – 3:10 Lucila Ohno-Machado: Responsible data sharing: Patient preferences, institutional policies, and privacy technology

3:10– 3:25 Corey Hudson: From buffer overflowing genomics tools to securing genomic pipelines

3:25 – 3:40 Charlotte Brannon: Applications of blockchain technology to genomics

3:40 – 3:45 Lightning Talk, Xiaoqian Jiang: Secure Cohort Identification for Clinical Trial using Heterogeneous Healthcare Data

3:45 – 4:30 Panel Discussion facilitated by Meg Doerr and Steven Brenner



**Introduction to the JBrowse genome browser**  
January 3, 2020 1:30-3:00pm  
Plaza Ballroom

**Schedule**

<b>Time</b>	<b>Presenter</b>	<b>Topic</b>
1:30-1:40	Ian Holmes	Welcome, JBrowse and JBrowse 2 overview
1:40-2:40	Colin Diesh and Garrett Stevens	JBrowse 2 architecture, SV inspector, and detailed overview of JBrowse 2
2:40-3:00	Ian Holmes	Coverage of the JBrowse ecosystem, including plugins, JBrowse Connect, Apollo, and the future.

## Translational Bioinformatics Workshop

### *Biobanks in the Precision Medicine Era*

January 4, 2020 1:30-4:30 in Salon 2&3

#### Workshop Agenda

- 1:30-2:00 Marylyn Ritchie, University of Pennsylvania, *Why use biobanks for precision medicine*
- 2:00-2:30 Matt Nelson, Deerfield, *How pharma uses biobanks for precision medicine*
- 2:30-3:00 Joanna Mountain, 23andMe, *23andMe's Customer-Powered Research*
- 3:00-3:30 Ju Han Kim, Seoul National Univ. College of Medicine, *Towards precision pharmacotherapy from rare and common variants in your personal genome*
- 3:30-4:00 Jason Moore, University of Pennsylvania, *Harnessing AI and Machine Learning in biobanks - the future and the now*
- 4:00-4:30 Discussion

## **Call for Session Proposals Pacific Symposium on Biocomputing**

The Big Island of Hawaii, January 3-7, 2021

This is an invitation to submit proposals for sessions in the 26<sup>th</sup> Pacific Symposium on Biocomputing (PSB), to be held January 3-7, 2021 on the Kohala Coast, the Big Island of Hawaii. PSB will bring together top researchers from the US, the Asian Pacific nations and around the world to exchange research for the presentation of work in databases, algorithms, interfaces, natural language processing, modeling and other computational methods, as applied to biological problems, with emphasis on applications in data-rich areas of molecular biology.

PSB has been designed to be responsive to the need for critical mass in sub-disciplines within biocomputing. For that reason, it is the only meeting whose sessions are defined dynamically each year in response to specific proposals. PSB sessions are organized by leaders in the emerging areas and targeted to provide a forum for publication and discussion of research in biocomputing's "hot topics." In this way, PSB provides an early forum for serious examination of emerging methods and approaches in this rapidly changing field.

Proposals for such sessions are hereby solicited. A proposal should identify a coherent topic that can be addressed by 3 to 12 papers. For example, a session might bring together papers on alternative approaches to a particular biological question or it might examine the applications of a particular technology in a variety of biological areas. A sample of more than 20 different decisions at previous PSB meetings have included:

- Artificial Intelligence for Enhancing Clinical Medicine
- Pattern Recognition in Biomedical Data: Challenges in Putting Big Data to Work
- Democratizing Health Data for Translational Research
- Imaging Genomics
- Precision medicine: addressing the challenges of sharing, analysis, and privacy at scale
- Text Mining and Visualization for Precision Medicine

A major goal of PSB is to create productive interaction among the rather different research cultures of computer science and biology. Recognizing that many in the computational community believe the value of a meeting depends on the quality of its review process, every full manuscript submitted to PSB is reviewed by at least two anonymous reviewers, as well as the session organizers and meeting chairs. Accepted papers are distributed in a proceedings volume at the meeting and are indexed in Medline and other bibliographic databases. However, we also recognize that many potential participants, particularly from the biological community, do not choose to submit full papers to conferences, even with assurance of availability and broad indexing. Therefore, PSB also includes a separate open submission abstract book and open poster presentations in which any registrant can present research.

### **Responsibilities of a session chair**

As a proposer of an accepted session, you will become the session chair. The chair's primary responsibility is to solicit high quality papers for the session, oversee the review, and write a tutorial introduction to your session. You are to solicit manuscripts, have them refereed, collaborate with the conference chairs in determining which manuscripts are to be accepted and structure presentation time in your session. Please contact us at the address below if you have any questions about the obligations entailed in becoming a session organizer.

**Call for Session Proposals  
Pacific Symposium on Biocomputing**

The Big Island of Hawaii, January 3-7, 2021

**Procedure for submitting proposals**

Session proposals can be as short as a single page and should in no case be more than 6 pages. The proposal should:

- Define a specific technical area to be covered.
- Justify why the proposed area is appropriate for PSB. Discuss why the topic is timely and important, and how the topic has been addressed in other conferences or recent publications.
- Argue that there is likely to be sufficient high quality, unpublished material to fill the session, e.g., a list of researchers you intend to solicit for papers. If there are unlikely to be adequate paper submissions, consider applying for a PSB workshop instead.
- Provide a short autobiographical sketch and an explicit statement that your organization endorses your involvement.
- Proposals must be submitted online at <http://psb.wufoo.com/forms/psb-session-proposal-submission-form/>.

**Important Dates**

February 7, 2020	Proposals Due
March 6, 2020	Notification Regarding the Proposals

Each proposal will be evaluated by the organizing committee. We look forward to your submissions.

**Questions? Please send email to**

**Lawrence Hunter, Ph.D.**

Director, Center for Computational Pharmacology & Computational Bioscience Program  
Professor of Pharmacology (Denver) & Computer Science (Boulder)  
E-mail: [larry.hunter@ucdenver.edu](mailto:larry.hunter@ucdenver.edu)

## **Call for Workshop Proposals Pacific Symposium on Biocomputing**

The Big Island of Hawaii, January 3-7, 2021

This is an invitation to submit proposals for workshops at the 26<sup>th</sup> Pacific Symposium on Biocomputing (PSB), to be held January 3-7, 2021 on the Kohala Coast, the Big Island of Hawaii. PSB will bring together top researchers from the US, the Asian Pacific nations and around the world to exchange research for the presentation of work in databases, algorithms, interfaces, natural language processing, modeling and other computational methods, as applied to biological problems, with emphasis on applications in data-rich areas of molecular biology.

We are soliciting proposals for three-hour workshops appropriate to the diverse PSB conference community. Workshops can include: panels of experts on emerging areas of computational biology that are not likely to attract the number of paper submissions required for a session; open discussions of topics important to the computational biology community; or other topics and formats. Workshops at previous PSB meetings have included:

- AI Ethics and Values in Biomedicine – Technical Challenges and Solutions
- Navigating ethical quandaries with the privacy dilemma of biomedical datasets
- Training the Next Generation of Quantitative Biologists
- Packaging Biocomputing Software to Maximize Distribution and Reuse
- Diversity and Disparity in Biomedical Informatics
- Integrating Community-level Data Resources for Precision Medicine Research
- Translational Bioinformatics Workshop: Biobanks in the Precision Medicine Era
- Methods for Examining Data Quality in Healthcare Integrated Data Repositories

### **Responsibilities of a workshop chair**

As a proposer of an accepted workshop, you will become the workshop chair. The chair's primary responsibility is to organize and preside over the presentations related to your workshop.

### **Procedure for submitting proposals**

Proposals can be as short as a single page and should in no case be more than 6 pages. The proposal should:

- Define a specific technical area to be covered, and a format for the workshop.
- Justify why the proposed area is appropriate for PSB. Discuss why the topic is timely and important, and how the topic has been addressed in other conferences or recent publications. Describe why the proposed format is appropriate for the workshop.
- If the workshop proposes invited experts, provide evidence that the experts will attend the workshop. Participants are required to register for the conference, and, unlike sessions, no financial support from the conference is offered to workshop organizers. Emails from potential participants are sufficient.
- Provide a short autobiographical sketch and an explicit statement that your organization endorses your involvement.
- Proposals must be submitted online at <https://psb.wufoo.com/forms/psb-workshop-proposal-submission-form/>.

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# PACIFIC SYMPOSIUM ON BIOCOMPUTING 2020

## ABSTRACT BOOK

Abstract titles and author index only.

**Poster Presenters:** Poster space is assigned by abstract page number. Please find the page that your abstract is on and put your poster on the poster board with the corresponding number (e.g., if your abstract is on page 50, put your poster on board #50).

Proceedings papers with oral presentations #2-39 are not assigned poster space.

Abstracts are organized first by session, then the last name of the first author. Presenting authors' names are underlined in the Table of Contents and in **bold** text on the abstracts.

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