RosettaCon Workshop

"Bridging Industry and Academia"

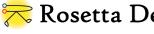


David Baker at the white board.

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HOSTED BY



🔀 Rosetta Design Group

www.rosettadesigngroup.com

ROSETTA's Origins

In 1999, a collection of scripts and programs used to predict the tertiary structures of proteins from their amino acid sequences was christened **ROSETTA** by David Baker and colleagues at the University of Washington in their paper entitled, 'Ab Initio Protein Structure Prediction of CASP III Targets Using ROSETTA'. The Critical Assessment of Techniques for Protein Structure Prediction (CASP) is a biennial competition of computational protein structure prediction technologies that was established in 1994. In the competition, protein sequences are provided for which crystal structures have been solved but not yet released to the public, eliminating the potential bias that arises from algorithms trained or developed to produce specific structures. The CASP competitions have always played a central role accelerating the development of Rosetta. The innovative drive will be particularly evident this year, as Rosetta developers will be submitting predictions for CASP8 during the month of July.

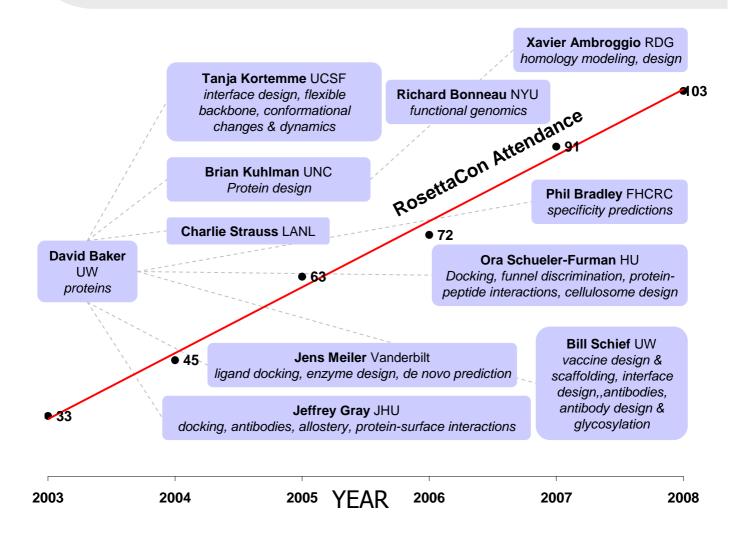
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Development of ROSETTA

The Rosetta algorithms and community grew in subsequent years as post-doctoral scholars from the Baker laboratory began their own laboratories (see below) and interests in macromolecular modeling developed beyond structure prediction.



Gabrielle Campbell and colleagues at the University of Washington's Tech Transfer Office worked with the Rosetta developers to establish the Rosetta Commons consortium to allow for continued collaboration. The consortium is governed by an executive committee composed of the principle investigators of each laboratory. Revenues from licensing Rosetta go directly towards supporting code development by funding RosettaCon and allowing for dedicated support staff. This unique arrangement allows for cutting-edge innovation through combining the strengths of the open source model of development with a coherent organizational structure. Since inception of the Rosetta Commons, the Rosetta Algorithms have been widely adopted by hundreds of academic labs in more than 35 countries. Many of the top pharmaceutical companies are also licensing the Rosetta suite.

TUE,	July 22 nd Agenda	RC2008		
11:00AM	Check in			
12:00PM	Buffet Lunch			
01:00PM	Introductions			
03:30PM	Session 1: Rosetta Science I Moderated by Jeff Gray			
	High resolution protein refinement and the crystallographic Srivatsan Rama (Baker lab)	phase problem		
	Design and Characterization of 2-Fold Symmetric TIM Carie Fortenberry (Meiler lab)	Barrels		
	Computational enzymology: Hypotheses about success and failure Alex Zanghellini (Baker lab)	es in enzyme design		
06:00PM	Buffet Dinner			
07:20PM	After Dinner Keynote Lecture David Baker			
	Rosetta Tutorials I Moderated by Xavier Ambroggio			
07:50PM	Tutorial 1: A framework for understanding Rosetta Xavier Ambroggio (RDG)	Destan Gereien I		
	Tutorial 2: High-resolution design of a protein loop. A Case Study by Jenny Hu (Kuhlman Lab)	Poster Session I		
	Tutorial 3: Command lines and Options Session Chu Wang (Baker lab) and Glenn Butterfoss (Bonneau lab, RDG)			

★ Beverage & Snack Breaks

Drinks

Breaks will be interspersed with the talks.

The following complimentary beverages and snacks will be available during breaks:

BEVERAGES

09:00PM

Regular and Decaffeinated Coffees Hot Water for Teas, Cider and Hot Chocolate Assorted Fruit Juices, Soft Drinks and Water

SNACKS

Sliced Seasonal Fresh Fruit Tray
Freshly Baked Cookies and Brownies
Assorted Domestic and Imported Cheeses Displayed with Fresh Fruits and Vegetables
Cracker Basket



The Rosetta Design Group LLC was established in 2007 to bridge the gap between the Rosetta Commons academic community and the pharmaceutical industry. A sampling of RDG activities are listed below:



Two days of Instruction and Hands-on Tutorials

★Contract Modeling Services

Antibody Modeling Loop Modeling

Epitope Mapping Protein Design and Stabilization

Homology Modeling Protein-protein Docking

Ligand Docking Protein-protein Interface Design

★RosettaCon Workshops

Networking and the Cutting Edge of Rosetta Development

★Rosetta Design Group Website

http://www.rosettadesigngroup.com Rosetta Support Resources

For more information, please contact: **info@rosettadesigngroup.com**

WED A.M., July 23nd

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RC2008

Buffet Breakfast
Session 2: "Rosetta Science: Structure prediction" Moderated by Brian Kuhlman
Solution and Adsorbed-State Ensembles of Biomineralization Proteins with RosettaSurface
David Masica (Gray lab)
(Re)discovering missing physics in Rosetta, through RNA Rhiju Das (Baker lab)
Protein Function Prediction Using Structural Homology Kevin Drew (Bonneau lab)
Understanding amphetamines by modeling the interaction of MDMA with the serotonin transporter from C. elegans Keith Henry (Meiler lab)
Session 3:"Moving to Mini: Structure prediction" Moderated by Charlie Strauss
Comparative Modeling of Protein Structures James Thompson (Baker lab)
Predicting Protein-DNA Interaction Specificity Phil Bradley (Bradley lab)
Ligand Docking with MiniRosetta Ian Davis (Baker lab)
Buffet Lunch

WED P.M., July 23nd

09:00PM	Tutorial 6: Kinematic loop closure and flexible backbone interface modeling Dan Mandell (Kortemme lab)		
07:50PM	Tutorial 5: Simulating localized backbone flexibility with backrub moves Colin Smith (Kortemme lab)		
	Tutorial 4: So you've done docking. What now? Nir London (Furman lab)		
	Rosetta Tutorials II Moderated by Xavier Ambroggio		
07:20PM	After Dinner Keynote Lecture Andrew Leaver-Fay (Baker Lab)		
06:00PM	Buffet Dinner		
	Small Molecules as Rotamers: Generation and Docking in ROSETTALIGA Kristian Kaufmann (Meiler lab)	AND	
U4.3UP№	Alteration of Enzyme Specificity by Computational Loop Remodeling and Paul Murphy (Baker lab)	Design	
04:30PM	Protein Design with Non-Canonical Amino Acids in MiniRosetta Doug Renfrew (Kuhlman lab)		
	Session 6: "Moving to Mini: Protein Design" Moderated by Rich Bonneau		
	De Novo Design of Protein-Protein Interfaces John Karanicolas (Baker lab)		
	OF rescuing MICE AND MEN: Structure-based computational design of superantigen inhibitors Nir London (Furman lab)		
02:50PM	HIV Immunogens Design - Targeting (Dis)continuous Motifs Bruno Correia (Schief lab)		
	Design of Beta Sheet Proteins Jenny Hu (Kuhlman lab)		
01:15PM	Session 5: "Rosetta Science: Protein Design" Moderated by Phil Bradley		
	Analytical Loop Closure & Flexible BB Interface Design Dan Mandell (Kortemme lab)		
	Backrub News Colin Smith (Kortemme lab)		
	PathRover: sampling dynamic molecular motion with Rosetta Barak Raveh (Furman lab)		
	Session 4: "Sampling techniques" Moderated by Bill Schief		

- NOTES —

THU A.M., July 24th

07:30AM	Buffet Breakfast			
9:00AM	Session 7: "Mini: Technical Details and Discussion" Moderated by Tanja Kortemme			
	Computational Experiments with a Lone-Pair Based Hydrogen-Bonding Potential in Mini Chris Sheldahl (Snoeyink lab)			
	Smoothed high-resolution backbone-dependent rotamer libraries for protein structure prediction Roland Dunbrack			
	Loop Modeling: Trimming the Fat Steven Lewis (Kuhlman lab)			
	Testing infrastructure and procedures in Mini Sergey Lyskov (Gray lab)			
	Discussion of Mini project release Yi Liu (Kuhlman lab)			
12:00PM	Buffet Lunch			



Rosetta Design Group

Scientific Advisory Board

Brian Kuhlman

Assistant Professor of Biochemistry University of North Carolina, Chapel Hill

David Baker

Professor of Biochemistry, HHMI Investigator University of Washington



Jeffrey J. Gray

Assistant Professor of Chemical Engineering Johns Hopkins University



Xavier Ambroggio

Managing Member Rosetta Design Group LLC

Management

Gabrielle Campbell

Rosetta Design Group Executive Adviser

VP of Business Development American Association of Medical Colleges



Glenn Butterfoss Associate Member

Rosetta Design Group LLC

THU P.M., July 24th

01:15PM	Session 8: "Interfaces to Rosetta" Moderated by Jens Meiler
	Rosetta Design Wizard: Protein Design Through PyMol Matt O'Meara (Kuhlman lab)
	FoldIt Seth Cooper (Baker-affiliated)
	Pysetta? PyRosetta? Will Sheffler (Baker lab)
03:30PM	Session 9: Macromolecular Modeling Outside of the Commons Moderated by Jens Meiler
	Redesign of galactose oxidase substrate specificity Shaun Lippow (Codon Devices)
	Strand-Exchange Engineered Dimers: A platform for multifunctional biotherapeutics and bispecific antibodies Jeff Way (EMD Serono)
	Trying to Make Better Drugs with Molecular Modeling: Structure-Guided Design of Therapeutic Antibodies Deping Wang (Biogen Idec)
	NanoEngineer-1: An extensible, open-source, multi-scale modeling and simulation program for DNA and protein structures Mark Sims (Nanorex)
06:00PM	Buffet Dinner
07:30PM	Discussions, Conclusions, Outlook and Hike Organization
09:00PM	Drinks

FRI, July 25th

	Buffet Breakfast	
07:30AM	Cascades Hike Departures!	
	Check out	
08:00AM	Box Lunch	
01:00PM	Non-Hikers Departure	



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The Rosetta Design Group would like to extend a special thanks to RosettaCon2008 Participants, the Rosetta Commons Community, the University of Washington, Merck Research Laboratories, and Nanorex for making this event possible.

Rosetta Commons Participants

Rosetta Design Group	New York University	University of California	University of North Carolina
Xavier Ambroggio	Rich Bonneau	Santa Cruz	Chapel Hill
	Kevin Drew	Karplus Lab	Chris Sheldahl
University of Washington	Glenn Butterfoss	Firas Khatib	
David Baker			Vanderbilt University
Vatsan Raman	FHCRC, Seattle	University of California	Jens Meiler
Ian Davis	Phil Bradley	San Francisco	Steven Combs
John Karanicolas	Chen Yanover	Tanja Kortemme	Kristian Kaufmann
Oliver Lange		Colin Smith	Andrew Morin
Florian Richter	Fox Chase Cancer Center	Sen Liu	Gordon Lemmon
Eric Althoff	Roland Dunbrack	Dan Mandell	Jens Krause
Jacob Corn	Maxim Shapovalov	Vageli Coutsias	Will Proffitt
Vladimir Yarov-Yarovoy	Guoli Wang	Noah Ollikainen	Keith Henry
Rhiju Das		Florian Lauck	Carie Fortenberry
Eva-Maria Strauch	The Hebrew University	Greg Friedland	Nicole Shen
Paul Murphy	Furman Lab	Elisabeth Humphris	
David Kim	Nir London		University of Washington
Will Sheffler	Barak Raveh	University of North Carolina	Bill Schief
Justin Siegel		Chapel Hill	Bruno Correia
Sarel Fleishman	University of Washington	Brian Kuhlman	Andrew Ban
James Thompson	Goodlett Lab	Steven Lewis	Mihai Azoitei
Andrew Leaver-Fay	Lars Malmstroem	Grant Murphy	Possu Huang
Ling Wang		Matthew O'Meara	Oleksandr Kalyuzhniy
Ingemar Andre	Johns Hopkins University	Doug Renfrew	Chris Carrico
Nobuyasu Koga	Jeff Gray	Jenny Hu	
Seth Cooper	Aroop Sircar	Ron Jacak	Los Alamos National Lab
TJ Brunette	Sid Chaudhury	Ramesh Jha	Charlie Strauss
Oliver Brock	Tiara Byrd	Ben Stranges	
Frank DiMaio	Monica Berrondo	Yi Liu	University of Washington
Chris King	Sergey Lyskov	Oana Lungu	UW TechTransfer
Chu Wang	Rahul Bhowmik	Eun Jung Choi	Alan Yen
Sagar Khare	Eric Kim		
Justin Ashworth	David Masica		RC2008
Summer Thyme			WA TAR

Industry Participants



Shaun Lippow

Scientist, Protein Engineering Cambridge, MA



Mark Sims

President Bloomfield Hills, MI

K. Eric Drexler

Chief Technical Advisor Los Altos CA

Piotr Rotkiewicz Senior Programmer



Deping Wang Cambridge, MA



Jeff Way

Director of Structural Biology Rockland MA



Louis Clark

Redwood City, CA



Viktor Hornak

Sr. Research Chemist Rahway, NJ



Katarina Midelfort

Biocatalysis Center of Emphasis Chemical Research and Development Groton, CT



Andrew Wollacott

Scientist Cambridge, MA

RC2008

Your Stay at Sleeping Lady



We look forward to welcoming you as our guest. To ensure you feel at home during your stay with us, we've provided the following information about our site. Please do not hesitate to contact us at 800-574-2123 if you have any questions.

- Check-in time is 3:00 p.m.; Checkout is 11:00 a.m.
- Our **Registration Desk** and **Gift Shop** are staffed 24 hours a day and look forward to serving you.
- We have a **non-smoking policy** indoors and out. Guests not adhering to the policy will be charged a minimum of \$150. Please help us keep Sleeping Lady smoke-free.
- Due to the four seasons we experience and our natural environment we recommend **business casual attire** and **non-slip footwear**. High heels are strongly discouraged.
- Sleeping Lady is a walking site. Please park your **vehicles** in the guest parking lot. No motor vehicles may be driven on site. A wheelchair is available upon request.
- Luggage carts are available directly outside the main office for the convenience of our guests.
- The Woodland Rock Pool is open 24 hours a day seasonally (mid April-September) and the
 adjoining hot pool is open year round. Both are accessible via your room key. Swimsuits are
 required.
- The Sauna and cold plunge is open 24 hours a day.
- If you would like to schedule a **massage**, please call us at the number above. 24-hour advance reservation is recommended.
- Grasshopper Fitness Center adjacent to the Sauna building is open 24 hours a day and is accessible via your room key.
- Roki, our resident Icelandic Sheep Dog will likely welcome you upon your arrival or make your acquaintance some time during your stay. Those with pet allergies should note that Sleeping Lady also hosts a resident cat, Kiska. Dog lovers Ask about our Canine Companion Program.
- There are no televisions in our guest rooms. We invite you to take our self guided art walk, a
 leisurely stroll down by the river or through our organic garden. We offer seasonal equipment
 rental including snowshoes, cross-country skis, bicycles and trail passes and information on the
 seemingly endless recreational opportunities surrounding our site.
- There are telephones, wireless and dial up Internet access in all the guest rooms and meeting spaces.
- Our friendly barkeep at **The Grotto Bar** keeps the music and beverages flowing, with wine, beer, spirits and soft drinks to choose from. Open daily at 4:30 10:00 p.m., or later at the barkeep's discretion.
- Dining Hours: Dinner is served from 6-7 p.m. Breakfast, 7:30-8:30 a.m. weekdays, 8-9 a.m. weekends. Lunch is served from noon-1 p.m. All meals are served in the Kingfisher Dining Lodge.
- O'Grady's Pantry, offers in between meal snacks, espresso, a wide selection of teas and juices, as well as a fine collection of Northwest wines, beers and spirits.



1. OFFICE & GIFT SHOP

Registration and guest services include check-in desk, gift shop, management office, and faxing and copying. Adjacent luggage depot offers carts for guests to transport luggage to rooms and bicycles for guest's rental.

2. MERGANSER

Administrative offices.

3. FLICKER

Comfortable meeting cabin with space for up to 40.

4. WOODPECKER

Seats up to 150. Built in audio-visual system.

CHIHULY'S "ICICLES"

Dale Chihuly's blown glass sculpture, dedicated in December 1996, is his only permanent outdoor installation.

6. KINGFISHER DINING LODGE & TERRACE

Menus feature Northwest cuisine with an international flair and offer fresh seasonal herbs, complimented by vegetables and fruits grown in the organic garden. Meals served buffet style. Breakfast starting at 7:30, lunch at 12, dinner at 6:00. Saturday & Sunday breakfast at 8:00.

7. RIVER MEADOW

Barbecue and picnic area. Outdoor stage for seasonal performances.

8. FIRE CIRCLES

One circle is located behind Kingfisher Dining Lodge overlooking the Icicle River, another is adjacent to the office and the third is outside of the Grotto Bar.

9. CHAPEL THEATER & SALMON GALLERY

A 185-seat performing arts theater. A grand piano, audiovisual conference equipment, a 12-foot projection screen and meeting/dressing rooms. The Salmon Gallery has a fireplace and piano, and accommodates receptions for up to 180.

10. NUTHATCH

Cozy meeting cabin with wood stove and space for up to 30.

11. ROCK CLUSTER #100-109

Ten units with private baths in a setting of granite boulders. Each unit sleeps 2-4

12. GROTTO BAR

An evening gathering place around a rocky fireplace for guests to relax over wine, beer and spirits. Seats 35. Seasonal outdoor beer garden and fire circle.

13. SOFT DRINK & ICE MACHINE

14. ROOKERY #157

On Woodpecker Hill, this cabin accommodates up to eight in a large room with double-decker beds. Two showers.

15. EYRIE #158

On Woodpecker Hill, this secluded lookout cabin features a king-size bed, one queen Murphy bed, wood stove, whirlpool bath and refrigerator.

16. WOODLAND ROCK POOLS

Up the hill in a clearing is the boulder-lined swimming pool and year-round hot pool. Extra towels in Sauna House.

17. DANCE

A meeting space accommodating up to 60.

18. SAUNA & MASSAGE ROOM

Relax in the sauna or schedule a massage. This cabin has a sitting room and an outdoor, screened terrace with a cold plunge pool. Open 24 hours. Towels provided.

19. QUAIL

Quail features state-of-the-art AV equipment, a wood stove, and seats up to 125. Large windows frame the mountains.

20. TADPOLE

Tadpole features state-of-the-art AV equipment, a wood stove, and seats up to 80. Large windows look out on pond, meadow and mountains.

21. FOREST CLUSTER #151-156

These three cabins have two units each, all with private baths. Each unit sleeps 2-4. One wheelchair accessible unit.

22. LIBRARY & GUEST COMPUTER WORKSTATION

Lined with hand-crafted bookshelves, this cozy cabin has a wood stove and comfortable seating. Curl up with a book.

23. POND CLUSTER #140-149

Ten units with private baths. Each unit sleeps 2-5. A pond extends into the courtyard.

24. FOUNTAIN CLUSTER #130-139

Ten units with private baths. Each unit sleeps 2-5. Includes two connecting units and a wheelchair accessible unit. Built around a Tsutakawa fountain.

25. TSUTAKAWA FOUNTAIN

Gerard Tsutakawa's water sculpture is a cast bronze column within the courtyard pool of Fountain Cluster. Forms and symmetry in nature provide the inspiration for this artwork.

26. MEADOW CLUSTER #120-129

Ten units with private baths. Each unit sleeps 2-5. Includes two connecting units and a wheelchair accessible unit.

27. DIPPER

Cozy meeting cabin with wood stove and space for up to 30.

28. COTTONWOOD CLUSTER #110-119

Ten units with private baths. Each unit sleeps 2-5.

29. ORGANIC GARDEN

Seasonal produce for Kingfisher Dining Lodge. Guests are welcome to visit the garden.

30. O'GRADY'S PANTRY

The Pantry, at the entrance to Sleeping Lady, sells espresso, soups, salads, sandwiches, ice cream and other desserts from Kingfisher Dining Lodge, seasonal produce and flowers from our organic garden, beer, wine, and spirits.

31. FITNESS ROOM & COIN LAUNDRY

Features cardiovascular, weight and stretching equipment, coin operated washer and dryer, changing rooms and shower. Open 24 hours, use room key for access.

32. ICICLE BROADCASTING CO.

Home of KOHO radio, 101.1 FM, local music and news station for Leavenworth and Central Washington.

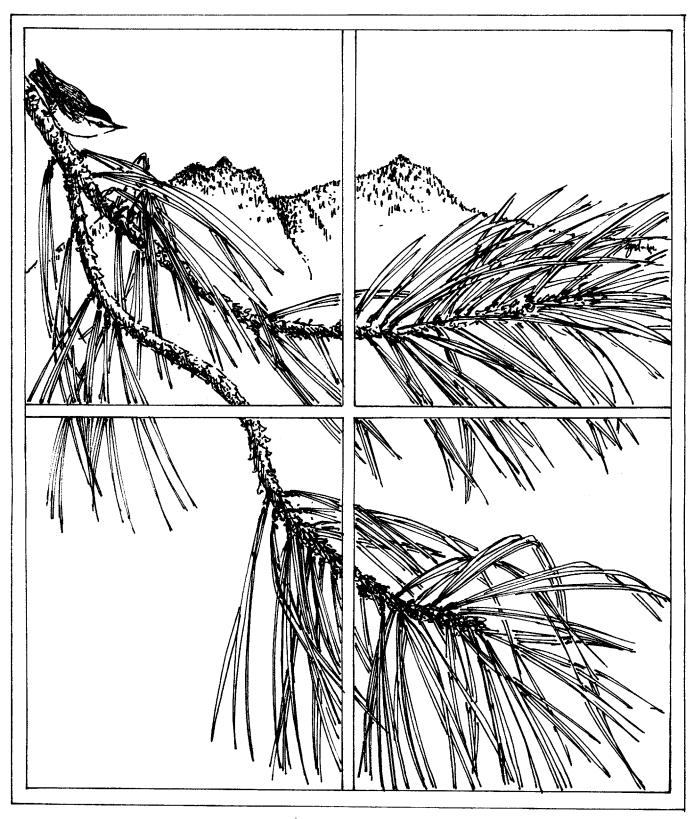
PUBLIC TELEPHONES are located at the entrances to Kingfisher Dining Lodge, the main office, and the rear entrance to the Salmon Gallery.

VOLLEYBALL AND HORSESHOES

Located near the organic garden entrance. Equipment is available at the front desk.

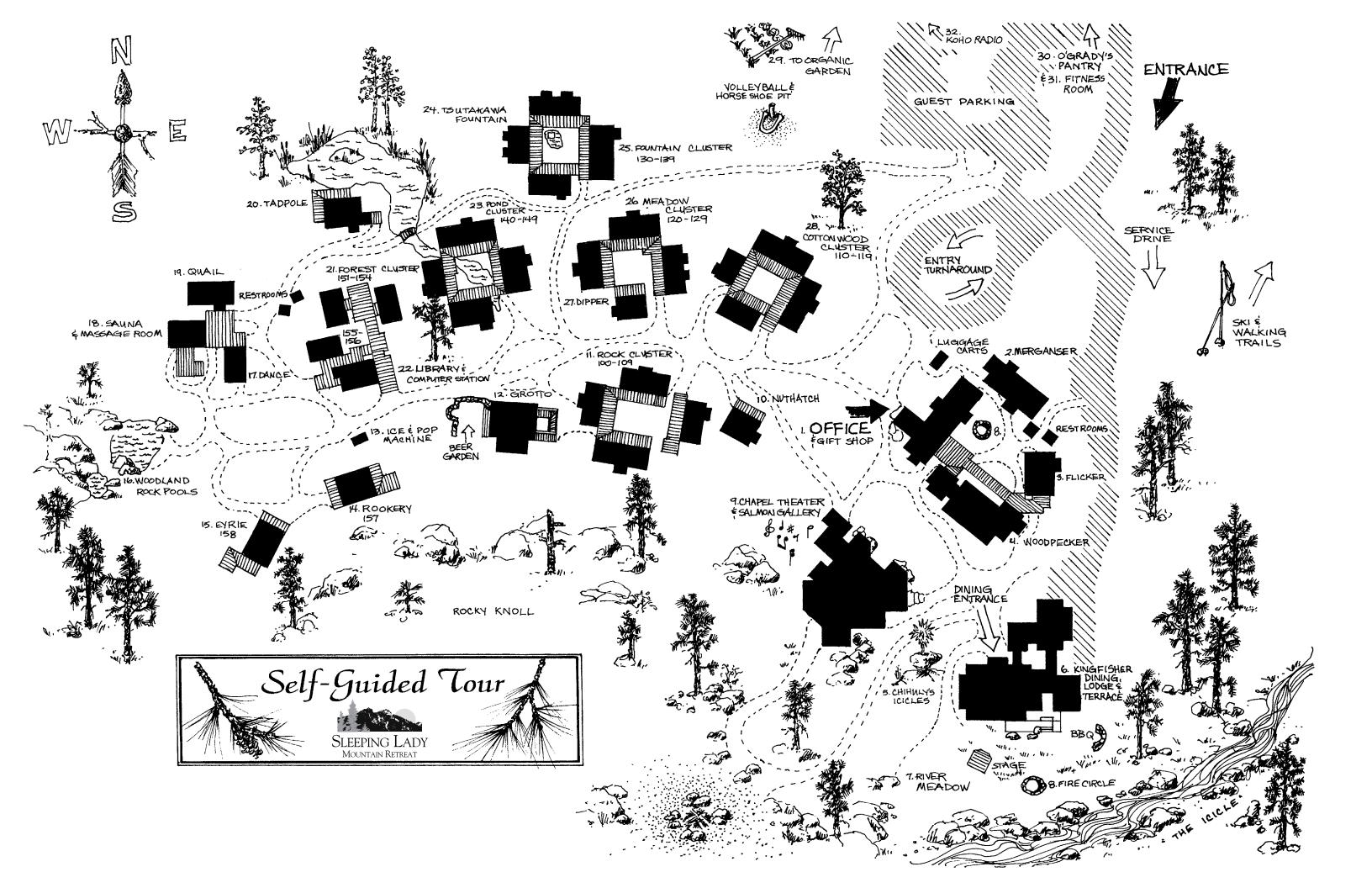
7375 Icicle Road, Leavenworth, WA 98826

(509) 548-6344 • (800) 574-2123 • Fax (509) 548-6312 e-mail: info@sleepinglady.com www.sleepinglady.com





The music of her rivers, the fragrance of her trees and the mystery of her rocks, combine to welcome visitors and restore the human spirit.





Map & Driving Directions

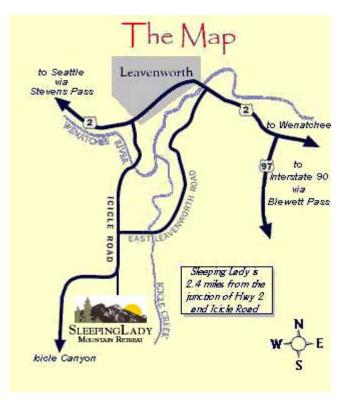
Directions

From Seattle via Interstate 90

Travel east on Interstate 90 past Cle Elum. Take the Wenatchee Exit 85 Go east on State Rt. 970 for 11.9 miles to US 97. Follow Highway 97 north over Blewett Pass for 35 miles to the junction of Highway 2. Turn left and travel west on Highway 2 for 5.6 miles through downtown Leavenworth to the west edge of town. Turn left on Icicle Road (just before milepost 99) and travel approximately 2.5 miles and past the Leavenworth National Fish Hatchery. Turn left into Sleeping Lady. Do not follow the major curve to the right which leads into Icicle Canyon.

From Seattle via Highway 2

Travel north on Interstate 405 from Seattle/Bellevue to Bothell where it meets Highway 522 east to Monroe. Head east on Highway 2 for 85 miles over Stevens Pass to the west boundary of Leavenworth. Turn right on Icicle Road. Follow directions above.



From Spokane via Interstate 90

Travel west on Interstate 90 to the junction of Highway 281 near George. Travel north on Highway 281 to Quincy. Turn left on Highway 28 and travel west to Wenatchee to Highway 2. Travel on Highway 2 to the west boundary of Leavenworth. Turn left on Icicle Road. Follow directions above.

From Portland, Oregon

Take I-5 north to Seattle. Go east on I-90 over Snoqualmie Pass. Past Cle-Elum follow signs to US-97 and Wenatchee over Blewett Pass. Turn left on Hwy 2 and travel 5 miles to Leavenworth. At the west end of town turn left on Icicle Road. Follow directions above. An alternative is Hwy 2 over Stevens Pass.

Want to know the road conditions before you go?

Find pass conditions, construction reports, and other transportation information on the traffic by clicking on HTTP://traffic.WSDOT.WA.Gov/Sno-info/

Airports

Sea-Tac International Airport is located south of Seattle and is 131 miles from Sleeping Lady. A wide range of airline carriers provides service to this international hub. Pangborn Memorial Airport in East Wenatchee is located 34 miles from Sleeping Lady. Horizon Airlines provides five direct flights per day between Seattle and East Wenatchee.