

**LAB 5**  
**GRANITOID INTRUSIONS FROM THE**  
**PENINSULAR RANGES BATHOLITH**

**The purpose of this lab is to continue our investigation of the rocks we encountered during the field trip. Please record answers on the Summary Page provided below.**

Describe the thin sections of the following samples using the **second half** (major, textures, plagioclase composition and zoning, and the thin section sketch) of page one of the three-page sample description worksheet. You should already have the hand sample description, rock name, and modal abundance of minerals from the notes you took on the field trip.

- 1) Los Pinos gabbro: LPGG (Stop 4-1)
- 2) Los Pinos intermediate peridotite/gabbro: LPGP (Stop 4-1)
- 3) Los Pinos hornblende peridotite: LPGH (Stop 4-1)
- 4) Los Pinos anorthosite: LPGA (Stop 4-1)

Is there any systematic change in the plagioclase composition among these samples?  
What do the textures in these thin sections tell us about the way these rocks were formed?

2. Look at the thin sections of the Santiago Peak volcanics (SPVG, SPVC-1, SPVC2-A, SPVC2-B). Make a sketch in which you identify the groundmass and any phenocrysts in the host rock, and include at least one clast in your sketch.

3. Describe the grain size and textures you observe in thin section PRM (Pine Valley Monzogranite; Stop 3). Compare this to the grain size and textures you observe in the inclusion from the same stop (PRME).

4. Look at the following samples with the reflected light microscope: La Posta small biotite facies (LPO-62), Kitchen Creek tonalite (KITCH; stop 5), and the Alpine tonalite (ALP; stop 2). Identify the oxide phases present in each sample based on the microscopy and what you learned in the field.

- Ilmenite  $\text{FeTiO}_3$  : Metallic gray to black
- Hematite  $\text{Fe}_2\text{O}_3$  : Metallic black with red highlights to blood red
- Magnetite  $\text{Fe}_3\text{O}_4$ : Dull gray to steel blue

5. Take a look at the geologic map of the area we visited. Summarize what you have learned so far about regional differences (western vs. eastern parts of the batholith) in a) mineral assemblages; b) range of bulk compositions of the intrusive rocks (you may generally infer this from the mineralogy and rock types!); c) average size of the intrusions.

6. In order to better understand the regional geology, what are three additional things we might like to know about the intrusions of the Peninsular Ranges Batholith?

## Lab 5 Summary Page

Question 1:

Is there any systematic change in the plagioclase composition among these samples?

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What do the textures in these thin sections tell us about the way these rocks were formed?

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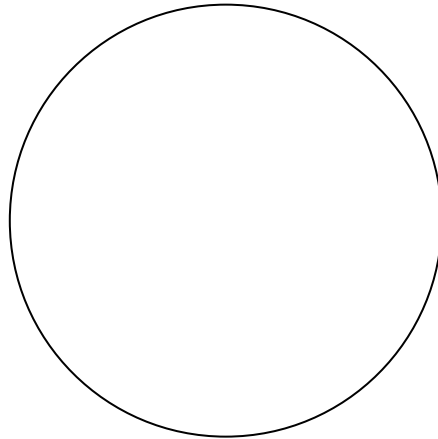
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Question 2:

Phenocrysts in Santiago Peaks volcanics:

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Question 3:

Grain size and textures you observe in thin section PRM (Pine Valley Monzogranite; Stop 3):

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Compare this to the grain size and textures you observe in the inclusion from the same stop (PRME).

Question 4: Oxide Minerals:

La Posta small biotite facies (LPO-62): \_\_\_\_\_

Kitchen Creek tonalite (KITCH; stop 5): \_\_\_\_\_

Alpine tonalite (ALP; stop 2): \_\_\_\_\_

Question 5:

Summarize what you have learned so far about regional differences (western vs. eastern parts of the batholith) in

a) mineral assemblages:

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b) range of bulk compositions of the intrusive rocks (you may generally infer this from the mineralogy and rock types!):

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c) average size of the intrusions:

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Question 6:

In order to better understand the regional geology, what are three additional things we might like to know about the intrusions of the Peninsular Ranges Batholith?

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