Sample#: FIL 10-1
Rock Name: Olivine bearing, vesiculated 2-Px basaltic andesite
Hand-specimen description: Highly porphyritic and vesiculated (1-5mm) medium-grained dark grey groundmass with abundant phenocrysts of subhedral plagioclase (1-5mm), anhedral cpx (3mm) and less-obvious anhedral green olivine ~1mm in size.

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	20	2.5-0.125 mm euhedral to subhedral single grains and glomerocrysts. Evidence for crystal breakage and bending, highly sieved cores (both dusty and spongy) with fairly intact rims present for all large crystals. Sieved areas have been filled in with other minerals in places (i.e. plagioclase, Fe-Ti oxides, olivine, cpx). Lack of monotonous zoned crystals. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°.
Clinopyroxene	10	1-0.25 mm subhedral to anhedral rounded grains showing rim-ward color dissolution. Occur as single grains as well as in glomerocrysts with plagioclase and opx. Cpx mantling opx in certain grains. Often have resorbed rims, Fe-Ti oxide inclusions, inclusions of smaller cpx. Distinguished by its cleavage, Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining, and good cleavage at 90°.
Fe-Ti oxides	3	0.25-0.125 mm mostly anhedral to subhedral single grains. Occur as olivine and cpx inclusions. Grains within groundmass are often associated with oxide staining. Distinguished because of their opaque nature.
Orthopyroxene	3	0.25-0.125 mm subhedral elongate laths with rounded edges. Appear clean with only a few small inclusions. Distinguished by its faint pink to green pleochroism, first order yellow interference color, and parallel extinction.
Olivine	<1	0.25-0.125mm subhedral to anhedral crystals showing embayment and holes in cores, Fe-Ti oxide inclusions, rim ward color zoning and turning to cpx in fractures and near rims. Occurs within glomerocrysts within other olivine as well as with plag and cpx. Distinguished by its irregular concoidal fracture, high positive relief, and high interference colors (3^{rd} order purple to blue).
Groundmass	53	Hypocrystalline seriate. Multiple sized phenocrysts in an intergranular Fe-Ti oxides, cpx, and plagioclase microlite laths, groundmass.
Olivine	5	0.015-0.05 mm anhedral rounded grains turning to iddingsite near rims and fractures, and have Fe-Ti oxide inclusions near rims. Distinguished by its irregular concoidal fracture, high positive relief, and high interference colors (3^{rd} order purple to blue).
Plagioclase	40	0.025-0.2 mm euhedral mostly needle-like laths. Swallowtail and quick growth features present. Show a lack of zoning. Distinguished by polysynthetic twining, low positive relief and first order white interference color, 2 cleavage planes at ~90°
Fe-Ti oxides	35	0.005-0.05mm euhedral to subhedral granular grains. Seem to be more concentrated around plagioclase phenocrysts. Distinguished because of their opaque nature.

Clinopyroxene	10	~0.025mm euhedral granular grains occurring equidimensional with olivine and Fe-Ti Oxide grains. Some grains display zoning. Often have small Fe-Ti oxides incluisons. Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining, and good cleavage at 90°.
Vesicles	10	Randomly orientation anhedral blobs showing no elongation or orientation within the sample. Distinguished by their isotropic nature and appearance of epoxy within them.

Textures/Structures:

1. Plagioclase phenocrysts have highly sieved cores (both dusty and spongy) with fairly intact rims. Sieved areas have been filled in with other minerals in places (i.e. plagioclase, Fe-Ti oxides, olivine, cpx). Lack of monotonous zoned crystals
2. Hypocrystalline seriate and highly vesiculated with an inter-granular groundmass texture
3. Subhedral to anhedral cpx with color zoning toward rims. Mantling opx in places.
4. Anhedral olivine
5. Rims show euhedral unzoned growth from a different composition of magma than the cores
6. Subhedral elongate laths of opx with rounded edges. Appear clean with only a few small inclusions

Petrogenesis/Interpretation:

1. Capo Graziano group and Monte Terrione unit by Tranne et al. (2000) which erupted at the same time as FIL 10-3 but from a different vent
2. Plagioclase core growth indicates cores were formed by fractional crystallization
3. Plagioclase then transported to a shallower chamber where they experienced core sieving followed by mineral ingrowth and rims were formed
4. Olivine crystals indicate the olivine was starting to be in disequilibrium with its surroundings.
5. Rounded Cpx and euhedral opx indicate cpx came on the liquidus first.
6. Presence of cpx mantling opx indicates two possible cpx growth stages.

Sample#: FIL 10-2
Rock Name: Porphyritic Olivine Basalt
Hand-specimen description: Grey slightly vesiculated groundmass with abundant fresh subhedral plagioclase, cpx, and anhedral olivine phenocrysts. All on average 1-2mm in size.

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	30	0.25-2.5 mm euhedral to anhedral single grains and glomerocrysts. Evidence for crystal breakage, sieved rims and cores, patchy cores, plagioclase inclusions, olivine inclusions near rims. Both boxy cellular growth and resorbtion rims present. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°.
Clinopyroxene	10	0.25-2.5mm euhedral to subhedral grains showing rim-ward dissolution. Xenoliths? up to 5.5 mm. Often have resorbed rims, Fe-Ti oxide inclusions, inclusions of smaller cpx. Distinguished by its cleavage, Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining, and good cleavage at 90°.
Fe-Ti oxides	1	0.075-0.25 mm mostly euhedral to subhedral clumps and single grains. Occur as olivine and cpx inclusions. Grains within groundmass are often associated with oxide staining. Distinguished because of their opaque nature.
Olivine	9	0.25-1mm subhedral to anhedral crystals showing embayment and holes in cores, Fe-Ti oxide inclusions, rim ward color zoning and turning to iddingsite in fractures and near rims. All indications of large degrees of disequilibrium. Distinguished by its irregular concoidal fracture, high positive relief, and high interference colors (3^{rd} order purple to blue).
Groundmass	50	Holocrystalline seriate. Multiple sized phenocrysts in a intergranular Fe-Ti oxides, cpx, and plagioclase microlite laths, groundmass.
Olivine	10	0.015-0.05 mm anhedral rounded grains turning to iddingsite near rims and fractures, and have Fe-Ti oxide inclusions near rims. Distinguished by its irregular concoidal fracture, high positive relief, and high interference colors (3^{rd} order purple to blue).
Plagioclase	40	0.025-0.2 mm euhedral mostly square crystals with tiny granular inclusions near their rims. Show a lack of zoning. Some crystals show slight degrees of disequilibrium near rims but overall grew slow. Distinguished by polysynthetic twining, low positive relief and first order white interference color, 2 cleavage planes at ~90°
Fe-Ti oxides	35	0.005-0.05mm euhedral to subhedral granular grains. Seem to be more concentrated around plagioclase phenocrysts. Distinguished because of their opaque nature.
Clinopyroxene	10	~0.025mm euhedral granular grains occurring equidimensional with olivine and Fe-Ti Oxide grains. Some grains display zoning. Often have small Fe-Ti oxides incluisons. Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining, and good cleavage at

		90°.
Vesicles	5	0.75-1.75mm randomly orientation anhedral blobs showing no elongation or orientation within the sample. Distinguished by their isotropic nature and appearance of epoxy within them.

Textures/Structures:

1. Large phenocrysts ~2.5 mm
2. Holocrystalline seriate and weakly vesiculated with an inter-granular groundmass texture
3. Anhedral cpx with color zoning toward rims
4. Euhedral skeletal olivine with new quick growth rims
5. Plagioclase phenocrysts have anhedral, embayed and monotonous cores
6. Rims show euhedral unzoned growth from a different composition of magma than the cores
7. Plagioclase glomerocrysts indicating one nucleation site

Petrogenesis/Interpretation:

1. Monte Gaurdia unit by Tranne et al. (2000) which erupted after Fossa Felci indicating a return to more basic composition
2. Plagioclase core growth indicates cores were formed by fractional crystallization
3. Monotonous plagioclase growth indicates fast FC after plag suppression
4. Skeletal growth on olivine crystals indicates the magma within the shallower system was mafic enough to grow more olivine
5. Cores formed from Fractional Crystallization in one system as evident by the glomerocrysts as well
6. Rims experienced mixing in a shallower-level chamber before eruption
7. Plagioclase glomerocrysts - but without evidence for a recharge event

Sample#: FIL 10-3
Rock Name: Hornblende 2-px Andesite
Hand-specimen description: Porphyritic, fine-grained light grey groundmass with phenocrysts of anhedral plagioclase (~1-2mm), euhedral hornblende (1-5 mm).

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	30	0.125-2.5mm appears to contain two crystal populations 1) Larger euhedral to subhedral complexly zoned and annealed together grains. Complex oscillatory zoning are present showing a complex range of zoning patterns. 2) Smaller anhedral highly sieved with patchy glass inclusions and bent and broken grains. Lots of broken corners and grains with entire cores gone, patchy brown glass in cores, anhedral dusty resorbtion near rims occurs followed by equilibrium and euhedral growth. Fe-staining in some plag. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°. Large bent and broken grains and occur within glomerocrysts with cpx, hbl, and glass and are rounded (3.5 mm).
Clinopyroxene	3	0.25-1.25mm subhedral to anhedral rounded grains of low integrity that occur as both small crystals within groundmass, and as glomerocrysts with each other (up to 2mm), plagioclase, and Fe-Ti oxides. Less than any other sample and occurs mostly in glomerocrysts. Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining and high relief.
Fe-Ti oxides	10	0.05-0.25mm euhedral to anhedral grains. Occurs within glomerocrysts and as inclusions within other mineral rims. Distinguished because of their opaque characteristic.
Biotite	Trace	~0.3mm. Euhedral elongate sheafs. Very hard to find within sample. Strong reaction rims. Some sheafs completely opaque. Distinguished by its strong brown to green pleochroism, perfect cleavage {001}, moderate to high relief, and birds-eye extinction.
Orthopyroxene	7	0.35-0.1 mm euhedral square shaped, subhedral elongate laths to anhedral rounded. Reaction rims of Fe-Ti oxides are present. Distinguished by its faint pink to green pleochroism, first order yellow interference color, and parallel extinction.
Hornblende	10	0.05-2.5 mm subhedral to mostly euhedral rounded to elongate grains. Way more hornblende than any other sample. Occurs in glomerocrysts with plagioclase and cpx up to 5mm. Plag inclusions in cores, much larger than plag phenocrysts. Resorbtion textures present including holes in cores filled with glass and reaction rims of Fe-Ti oxides/pyroxene.. Distinguished by brown to green pleochroism, typical amphibole shape and good cleavage (60°-120°), simple twinning, and high (2^{nd} order) birefringence.
Groundmass	40	Hypocrystaline glassy, with tiny euhedral and swallowtail plag laths, oxides, and opx grains
Orthopyroxene	10	0.03-0.3mm euhedral elongate laths and glomerocrysts. Reaction rims of Fe-Ti oxides are present. Distinguished by its faint pink to green pleochroism, first order yellow interference color, and parallel extinction.

Glass	50	Grey to brownish green glass; gray to brownish green in XP; glass inclusions in cores of most phenocrysts. Occurs in most microphenocrysts. Distinguished because of their isotropic nature.
Plagioclase	25	0.05-0.2mm euhedral elongate crystals. Mostly white (no zoning); tiny-needle like microlites in glass; swallowtail and elongate grains present. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°.
Fe-Ti oxides	15	~0.01mm fine grained anhedral granular grains. Filling in spaces between pyroxene, plag and glass. Distinguished because of their opaque characteristic.
Vesicles	Trace	~0.125 irregularly shaped and orientated blobs. Usually only occur where plag cores have been broken out. Distinguished because of their isotropic nature and tiny hair-like unidentifiable microlite inclusions.

Textures/Structures:

1. Swallowtail plag microlites within groundmass
2. Porphyritic with abundant phenocrysts of hbl and plag and a slightly glassy hypocrystlline groundmass
3. Less cpx than seen so far. Occurs only in large glomerocrysts
4. Abundant euhedral and broken hornblende which appears larger than plag
5. Very little biotite
6. Large amount of oxides and oxide staining
7. Plagioclase phenocrysts show two crystal populations
8. Plagioclase has lots of broken corners and grains with entire cores gone, patchy brown glass in cores, anhedral dusty resorbtion near rims occurs followed by equilibrium and euhedral growth.
9. Very little vesicles and lots of glass

Petrogenesis/Interpretation:

1. Capo Graziano group and Le Punte unit by Tranne et al. (2000) occurred with 10-1 but from a different vent.
2. Euhedral glassy plagioclase cores indicate large amounts of dissolution occurred prior to rim-ward growth
3. Rims display complex to regular oscillatory zoning indicating that after dissolution occurred, fractional crystallization proceeded.
4. Euhedral, opx, hornblende, and small amounts of biotite indicate they grew after the dissolution event that effected plag cores
5. Possibly two magmas mixed to form the composition as evident by two groups of plagioclase
6. Dissolution rims present on hornblende and biotite indicate dehydration and fast cooling prior to eruption.
7. Bent or broken grains indicate possible mixing and gas release- also evident by lack of vesicles.

Sample#: FIL 10-6
Rock Name: Hornblende-bearing 2-pyroxene andesite- 58 wt. %
Hand-specimen description: Slightly porphyritic and vesiculated fine-grained dark grey groundmass with sparse phenocrysts of anhedral plagioclase, euhedral cpx, and less obvious brown opx ~1mm in size.

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	25%	0.25-2.75 mm subhedral with clean cores and reaction rims; rounded glomerocrysts with granular plag+cpx; oscillatory zoning common, large mono crystals present; seem to be more concentric rings of resorbtion than other samples; almost all rims show dissolution oxide inclusions and cpx inclusions. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°
Clinopyroxene	7%	0.1-0.4mm euhedral stubby prism and elongate rectangular laths, color zoning and twining common, 8-sided basal cross-sections. Reaction rims and Fe-Ti oxide inclusions common. Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining and high relief.
Orthopyroxene	3%	Anhedral elongate rectangles and blobs (5-20 ticks in 4X); occurs with cpx and plag in glomerocrysts
Fe-Ti oxides	5%	0.01-0.10 mm anhedral and euhedral. Distinguished because of their opaque nature.
Hornblende	<1%	0.1-0.2 mm euhedral, good integrity grains with isotropic rings around them. Distinguished by brown to green pleochroism, typical amphibole shape and good cleavage (60°-120°), simple twinning, and high (2^{nd} order) birefringence.
Vesicles	10%	0.25-1 mm irregular shaped and orientated blobs. Distinguished because of their isotropic nature and tiny hair-like unidentifiable microlite inclusions.
Groundmass	50%	Holocrystalline seriate. Glass+ swallowtail plagioclase+ granular oxides ranging in sizes from phenocrysts to microphenocrysts.
Glass	20%	Lt gray to brown streaks. Distinguished because of their isotropic nature.
Plagioclase	40%	0.025-0.1mm euhedral, skeletal, swallowtail and quick growth textures, needle-like felted almost looks trachytic. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°
Fe-Ti oxides	30%	~0.005 mm euhedral to anhedral granular and rounded grains. Distinguished because of their opaque nature.
Clinopyroxene	10%	0.025-0.15 mm anhedral rounded to rectangular; color zonation common, Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining, and good cleavage at 90°.

Textures/Structures:

1. Holocrystalline seriate

2. Resorbed opx in groundmass
3. Euhedral cpx with reaction rims
4. Swallowtail plag microlites in groundmass- quick cooling
5. Reaction rims on hornblende- late stage dehydration events
6. Anhedral rounded andesitic xenoliths
7. Anhedral plagioclase phenocrysts with inclusion rich cores and sieved rims

Petrogenesis/Interpretation:

1. Fossa Felici group, last to erupt within the Punta Arinella unit.
2. Plagioclase core textures indicate normal kinetically controlled magma conditions were present during formation including fractional crystallization
3. Sieved and spongy plagioclase rim-ward textures show dissolution from dynamic processes such as recharge or assimilation
4. Resorbed opx and opaque hornblende reaction rims indicates the dissolution was most likely an assimilation event.
5. Quick growth swallowtail textures of plagioclase within the groundmass indicate quick nucleation, growth and cooling
6. Cores grew in an andesite formed from Fractional Crystallization as evident by the xenoliths
7. Later mixing occurred when the system was recharged by an assimilated magma

Sample#: FIL 10-10
Rock Name: Biotite-bearing, high-K hornblende 2-px Andesite
Hand-specimen description: Slightly porphyritic and weakly vesiculated fine-grained light grey groundmass with sparse phenocrysts of anhedral plagioclase (~1mm), euhedral hornblende (1-2 mm), and less obvious light brown euhedral pyroxene (~2mm).

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	20	0.25-2mm anhedral to euhedral resorbed grains with brown glass in cores but rims don't show much dissolution. Bent and broken grains occur and glomerocrysts occur with cpx and are rounded (0.5-2.5mm). Grains present in the glomerocrysts are grouped and have irregular contacts between them, although mostly single grains occur. Complex oscillatory zoning are present showing a complex range of zoning patterns. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°.
Clinopyroxene	5	0.25-1.25mm euhedral to subhedral grains elongate grains of high integrity that occur as both small crystals within groundmass, single grains phenocrysts and as glomocrysts with plagioclase. Color zoning and reaction rims of Fe-Ti oxides, as well as tiny sweeping hairs on the reaction rims of biotite, hornblende and olivine. Distinguished by its lack of pleochroism, higher interference colors (2^{nd}-3^{rd} order), sweeping inclined extinction, simple twining and high relief.
Fe-Ti oxides	7	0.05-0.25mm euhedral to anhedral grains. Occurs within glomocrysts and as inclusions within other mineral rims. Distinguished because of their opaque characteristic.
Biotite	1	0.25- 0.5mm euhedral to subhedral, high integrity, elongate sheafs that often have reaction rims that include pyroxene and Fe-Ti oxides. Distinguished by its strong brown to green pleochroism, perfect cleavage {001}, moderate to high relief, and birds-eye extinction.
Orthopyroxene	3	0.03-0.3mm euhedral elongate laths and glomerocrysts. Reaction rims of Fe-Ti oxides are present. Distinguished by its faint pink to green pleochroism, first order yellow interference color, and parallel extinction.
Hornblende	3	0.25-1mm subhedral to euhedral rounded to elongate grains. Resorbtion textures present including holes in cores filled with glass and reaction rims of Fe-Ti oxides/pyroxene. Occurs in glomerocrysts with plagioclase. Distinguished by brown to green pleochroism, typical amphibole shape and good cleavage (60°-120°), simple twinning, and high (2^{nd} order) birefringence.
Groundmass	61	Holocrystlline glassy, with tiny euhedral and swallowtail plag laths, oxides, and a few small cpx + opx grains
Orthopyroxene	10	0.03-0.3mm euhedral elongate laths and glomerocrysts. Reaction rims of Fe-Ti oxides are present. Distinguished by its faint pink to green pleochroism, first order yellow interference color, and parallel extinction.
Glass	50	Clear glass; gray in XP; glass inclusions in cores of most phenocrysts. Occurs in most microphenocrysts. Distinguished because of their isotropic nature.

Plagioclase	30	0.05-0.2mm Lots of broken pieces; mostly white (no zoning); tiny-needle like microlites in glass; swallowtail and elongate grains present. Distinguished by polysynthetic twining, low positive relief and first order white interference color, compositional zoning and 2 cleavage planes at ~90°.
Fe-Ti oxides	3	~0.01mm fine grained anhedral granular grains. Filling in spaces between pyroxene, plag and glass. Distinguished because of their opaque characteristic.
Hornblende	Trace	0.25-0.75mm rounded grains and granular moldy-like appearance. Reaction rims of Fe-Ti oxides/pyroxene are present. Distinguished by brown to green pleochroism, typical amphibole shape and good cleavage (60°-120°), simple twinning, and high (2^{nd} order) birefringence.
Vesicles	7	0.125-1mm irregularly shaped and orientated blobs. Distinguished because of their isotropic nature and tiny hair-like unidentifiable microlite inclusions.

Textures/Structures:

1. Swallowtail plag microlites within groundmass
2. Slightly porphyritic with least phenocrysts and a very glassy holocrystalline groundmass
3. Holocrystalline seriate and weakly vesiculated with an inter-granular groundmass texture
4. Euhedral cpx and opx with zoned/resorbed rims
5. Hornblende and biotite with resorbtion rims of oxides and pyroxenes
6. Large amount of oxides
7. Plagioclase phenocrysts- euhedral highly sieved/ glassy cores and intermediates
8. Plagioclase rims show normal or oscillatory zoning
9. Plagioclase phenocrysts show bent and broken grains

Petrogenesis/Interpretation:

1. Cycle III, Group 5 Monte Montagnola- (after 10-15 according to Santo) (last erupted according to Tranne) most evolved composition
2. Euhedral glassy plag cores indicate large amounts of dissolution occurred prior to rim-ward growth
3. Rims display complex to regular oscillatory zoning indicating that after dissolution occurred, fractional crystallization proceeded
4. Euhedral cpx, opx, hornblende, and biotite indicate they grew after the dissolution event that effected plag cores
5. Dissolution rims present on hornblende and biotite indicate dehydration and fast cooling prior to eruption.
6. Cores were heavily resorbed from recharge or assimilation
7. Rims were formed from Fractional Crystallization associated with rapid decompression of water-saturated magma during assent

Sample#: Fil 10-13
Rock Name: Cpx-olivine basalt/basaltic andesite
Hand-specimen description: Highly porphyritic and weakly vesiculated fine-grained dark grey groundmass with abundant fresh phenocrysts of anhedral plagioclase (2-3mm), euhedral-subhedral cpx (~1 mm), and anhedral olivine with iddingsite rims (~3mm).

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	25	Large grains subhedral smaller grains euhedral. Much more stable. Resorbed core and rim, cpx inclusions in core oxide inclusions near rims, lack of complete resorbtion as compared to 10-6- lot more normal zoning patterns/twining. Patchy cores present. Odd blue monotonous zoning, evidence for broken crystals. Glomerocrysts with cpx. Overall resorbed rims.
Clinopyroxene	15	Mostly anhedral low integrity grains. Fe-Ti oxide inclusions. Occurs in glomerocrysts with other cpx and plag. Color zoning present, twins.
Fe-Ti oxides	3	0.075-0.25 mm mostly euhedral to subhedral clumps and single grains. Occur as olivine and cpx inclusions. Grains within groundmass are often associated with oxide staining. Distinguished because of their opaque nature.
Olivine	7	Anhedral resorbed. Heavy reaction rims of iddingsite. Look unhappy
Groundmass	50	Glass, plagioclase, Fe-Ti oxides, lack of vesicles
Glass	20	Still have a little grey glass
Plagioclase	30	0.025-0.1mm euhedral plag laths. Looks pretty stable- lack of swallowtail and needle-like grains.
Clinopyroxene	7	Mostly anhedral low integrity grains. Fe-ti oxide inclusions. Occurs in glomerocrysts with other cpx and plag. Color zoning present, twins.
Olivine	3	Anhedral resorbed. Heavy reaction rims of iddingsite. Looks unhappy
Fe-Ti oxides	30	~0.0125mm euhedral to anhedral granular grains and oxide staining. Distinguished because of their opaque nature.
Vesicles	10	0.75-1.75mm randomly orientation anhedral blobs showing no elongation or orientation within the sample. Distinguished by their isotropic nature and appearance of epoxy within them.

Textures/Structures:

1. Plagioclase shows a lack of complete resorbtion, more twining, patchy cores, and monotonous zoning.
2. Evidence for broken plagioclase crystals
3. Cpx inclusions occur within plag cores and overall low integrity and anhedral shapes.
4. Olivine appears in disequilibrium
5. Lots of vesicles and glass present within groundmass

Petrogenesis/Interpretation:

1. First member erupted of the Fossa Felici group in the Punta Arinella unit.
2. Cpx within plag cores indicate cpx came on the liquidus priors to plag
3. Monotonously zoned plag indicate plag suppression occurred until after cpx growth and then FC occurred very quickly
4. High amount of glass and vesicles indicate a water-rich environment in which the plag grew

Sample#: Fil 10-15
Rock Name: Med-high-K xenolith-bearing olivine-cpx basaltic andesite
Hand-specimen description: Highly porphyritic and weakly vesiculated sugary granular grey groundmass with abundant fresh phenocrysts of anhedral plagioclase (2-3mm), subhedral to anhedral cpx (~1 mm)**,** and anhedral bright green olivine (~3mm).

Mineral/feature	Modal%	Size, morphology, distinguishing optical properties
Plagioclase	20	Glomerocrysts of anhedral rounded crystals, glomerocrysts with one nucleation site; overall not very resorbed; look similar or better than 10-13; anhedral large grains; seemed to more broken and bent with holes in center; euhedral med sized; lack of zoning- mostly white; much more twinning; few large pieces of broken plagioclase.
Clinopyroxene	15	Subhedral to anhedral large intact grains with oxide, olivine, and plag inclusions and holes in cores. Twining and glomerocrysts very common.
Fe-Ti oxides	1	0.075-0.25 mm mostly euhedral to subhedral clumps and single grains. Occur as olivine and cpx inclusions. Grains within groundmass are often associated with oxide staining. Distinguished because of their opaque nature.
Olivine	5	Anhedral to subhedral; reaction rims of iddingsite; Occurs as inclusion within Cpx; holes in cores; altered to opx
Groundmass	59	Lots more vesicles and glass than 10-13; Fe-Ti oxides, ol+cpx
Glass	45	Grey- brown glass with tiny opx and plag microlites
Plagioclase	15	Tiny laths, lack of swallowtail, pointed ends; broken pieces;
Fe-Ti oxides	25	0.005-0.05mm euhedral to subhedral granular grains. Seem to be more concentrated around plagioclase phenocrysts. Distinguished because of their opaque nature.
Vesicles	15	Large vesicles; irregular shaped; randomly orientation anhedral blobs showing no elongation or orientation within the sample. Distinguished by their isotropic nature and appearance of epoxy within them.

Textures/Structures:

1. Both types of glomerocrysts- high temp and new nucleation
2. Glassy groundmass and holes in almost every phenocrysts, and bent or broken monotonous plag- explosive eruption or degassing magma
3. Remnant olivine
4. Appearance of euhedral Opx and then Hbl
5. Large rounded multi-mineral glomerocrysts indicate high heat annealing

Petrogenesis/Interpretation:

1. After 10-13, in Fossa Felici group of the Punta Arinella unit.
2. Mono plag came from 10-13 and new plag came from continued FC in a shallower chamber