

# GRANULAB GRANNY (2018-11-25)



## Basic use

- Drop a soundfile (WAV/AIFF) into the empty box to get sound going.
- Every setting/param you change is applied over time: 0-600 seconds (10 minutes). Change time is set by the "time" knob in patch box, lower left.
- **Shift key** to fine-tune values and controllers.
- **Control-click** to set default value of param knob.
- Keyboard digits 0-9 sets exact value (nearest 0.1, 1 or 10 dep on range).  
(**BUG**: Not correct for grain freq since this is an offset from 1:1. will do something...).

**MIDI**: notes change Grain Frequency. Note C4 (=60) means zero offset.

Granny is monophonic, plays the last note, and switches to previous note when released.

If you send a MIDI note, Granny switches to only use MIDI note input.

The dark blue ADSR is used (the light blue below is for controls).

If you want continuous sound after that, raise the start/end value of the ADSR.

**The Soundfile** is shown with amplitude (red) and "noisiness" (yellow) curves overlay.

These values can be used in a controller to influence any parameter.

Select a part of the sound by mouse in the sound box. Ctrl-click to drag the selection.

Sound is created by playing back many small sound clips, "*grains*".

Each grain is a fixed mini-synth that plays a part of the sound once and then disappears.

## Grain parameters

- **Sound playback rate**. Below soundfile box. Default is 1:1 normal play.
- **Play position** cannot be set directly (right now), but there are 2 controllers for jumping around in the soundfile.  
**TIP**: You can click waveform selection to cause a position change, then set back to full. Not a good solution. Will fix this, but animation of the play position seems harder than expected.

## Grains box

- **Grain rate** and **grain length**. Grains can be 1 ms up to 10 seconds. New grains start at a rate of 1/60 secs up to 2000 per second.
- **Grain frequency**. Semitones offset from original sound. Use Shift key to fine-tune. Keys 0-9 jump to exact values, but off by 1. (TODO...)  
MIDI notes offset frequency. MIDI C4 (key 60) is zero offset.
- **Grain glissando**. Each grain can rise/drop in pitch. This gives that classic grainy sound (which may be a little tiring, or just your thing). Small gliss offsets make time-stretched sounds less metallic,  
**TIP**: Set gliss to zero and use a random control with small amount.
- **Grain attack/decay**. Left controller for attack, right for decay (but I usually don't find much use for controllers here).  
**TIP**: If you use large grain gliss, changing attack and decay affects the sound more.

**Density**: The number of grains playing together, i.e. grain length × grain rate.

High density may overload the CPU. This leads to chopping sound and general misery, so you gotta watch the density. Currently max 1000 grains at the same time, usually doesn't work. Prefer shorter grains when grain rate is high.

Granny has amplitude compensation for density. A knob beside Amp (bottom-right) adjusts level.

**TIP**: Internal param grain density ("**g.dns**") also works as a controller for individual values.

## Controllers

Each main parameter (big round knob, or pair of knobs) has 2 boxes where you can select controllers to influence the param value:

- **Random**: Y up-down prefer near/extreme offsets from param. X left-right for new value each time, or to "drunk walk", ie continue from previous value.
- **Sound Amp / Noisiness**: Y: mix amp/noise; X: time offset, max +/-3 seconds.
- **LFO**: Shaped sine-square-pulse-saw (Like the Squinewave oscillator) Extra slider for frequency 0-100 cycles per sec. (hold shift to fine-tune).
- **ADSR**: mix between the two ADSR:s. Works when MIDI notes are played.
- **MIDI values**: Note, velocity, Pitchbend, Mod wheel. Always valid/latest value heard.
- **Granny Internal**: Use value from one param to control another.  
**TIP**: Sound playback position, "**s.pos**" follows soundfile playback.

For effects with 2-3 knobs, the left controller affects the top/left knob, the right controller goes on the bottom/right.

---

## Patches

Patches are stored in the large grid grid of numbered square slots. They are numbered 1-125 (this may change).

- **TIP:** Drop *granny.json* on the Patch Drop button first thing!
- Use the **Patch drop** button to save and load new patch files. (click button to save, drag a *granny.json* patch file to load it).
- Top-left slot #0 (blue) is the default patch. Cannot be changed. *Shift-click* to restore default ADSR, change-time etc.
- Patch 1 (next to default) is always stored when GUI is closed, and restored when Granny is opened.
- *Shift-click* to store *current* value, *Ctrl+Shift-click* to store *knob* value. (They are different during change time between edits.)
- *Click* to use a patch. *Double-click* to use immediately (skip change time).
- *Right-click* for options copy/paste/clear to manage patches.

Granny patch files are human-readable with fairly simple format (if you're not afraid of brackets).

**TIP:** If you hand-edit, there are many online JSON validators to check the syntax.

---

## Effects are applied per grain, in order

- **Fold/Boost** and **Bitcrush** (smoothed to less-aliasing).
- **Filter:** Dual SVF filter in single control box. The left controller affects filter frequency and Q of both filters, the right affects the low-mid-high mix. **TIP:** Store different filter settings in patches, use long Change time to sweep.
- **Delay.** Each grain reads from delay line and copies itself once into delay future. Delay is more dense the more grains there are. **TIP:** Use with Sound Amp/Noise controller. Or Internal sound position ("**s.pos**").

Effects have several param knobs, but still only 2 controllers each. The left controller is applied to the top/left effect param, the right one to the other.

**Filter:** Left controller affects both freq/Q dots, the right one controls low/mid/high mix.

---

## TODO

Known bugs:

- Keyboard digits for grain freq offset is off-by-1 and generally confusing.

- Host automation is only sort of half ready.

Host support:

- MacOS: Tested with Ableton 9, Cubase, Bitwig 2.4, Waveform 9.3.2, Freestyle. OS 10.9 required
- Windows: Ableton 10, Reaper 5.941, Renoise 3.1, Bitwig 2.3.5, FL Studio 20.
- Automation or param editing from VST host only partially supported still.

Missing features:

- *Patches:* Lots of work. Playing patches in order, click-drag to morph between patches etc.
- *Soundfile:* Playback position marker.
- *Interface:* several options needed; MIDI use, patch load/save and partial patch use, etc.

Things that should have been in place before this release:

- Drag-crossfade patches (when there are patches in adjacent slots).
- Patch player along a line -- after fixing the soundfile split along a line.
- Patch randomness knob. (hit same patch and get slightly (or very) different sound!)
- MIDI / Pitch: Option to only allow semitones. Scale options may be part of this.
- Resizing option. (Just need a button, all sizes are relative to the font).

---

<https://www.abc.se/~re/GranuLab/Granny.html>

[rasmus.ekman@abc.se](mailto:rasmus.ekman@abc.se)

(pdf created by sinkmusic)