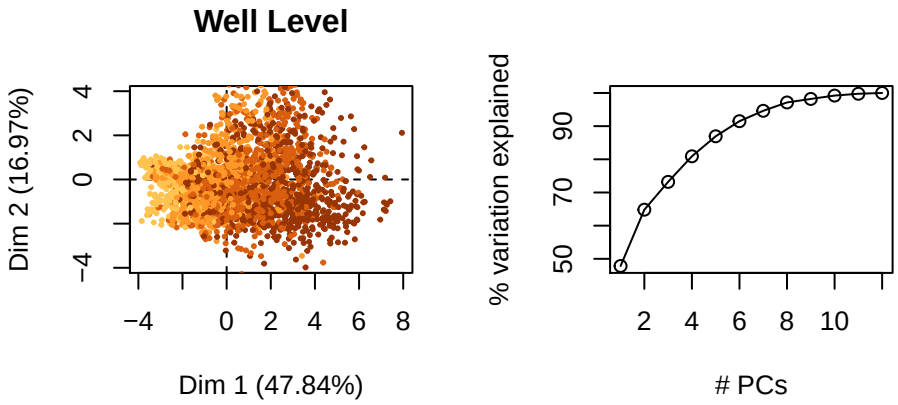
Exploring Ontogeny Analysis

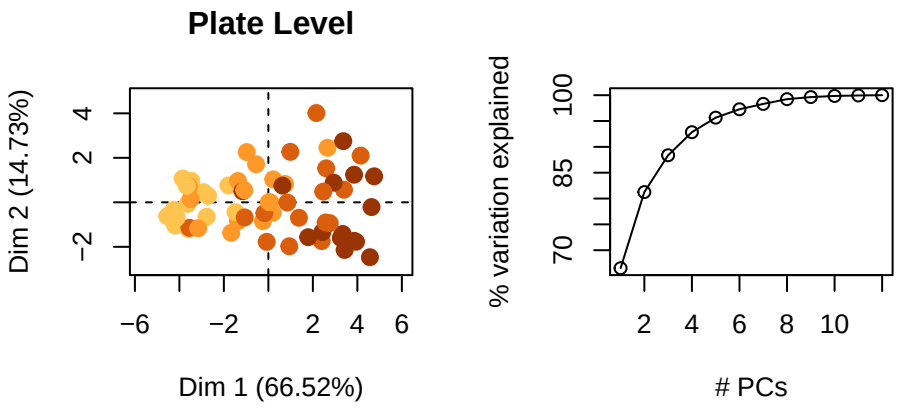
D Hall

July 22, 2015

PCA

PCA was performed on different subsets of the data: all the data, a subset of variable most useful in linear regression on DIV, and a subset including only firing rate, cv of IBI and no. network spikes. Plots are shown below.





variable	PC 1 coordinate	PC 2 coordinate
within burst firing	0.92	-0.16
firing rate hz	0.92	-0.12
bursts rate min	0.90	-0.06
no. bursting electrodes, 1 per min	0.90	0.27
ns rate	0.81	-0.05
percent spikes in bursts	0.78	0.13
cv of ISI in burst	0.73	0.19
cv of IBI	0.51	-0.41
burst duration	0.48	-.39
no. electrodes in peak ns	0.28	0.90
ns duration	0.27	.89
correlation	0	-.11

Table 1: The table displays the variable loadings of the well level PCA with all variables. Roughly speaking, the first PC dimension represents an increase in bursting rate and network spikes, while the second PC dimension represents the network level behavior.

variable	PC 1 coordinate	PC 2 coordinate
no. bursting electrodes, 1 per min	0.96	0.01
firing rate hz	0.95	-0.14
firing rate in burst	0.93	-0.18
burst rate	0.93	-0.05
cv of ISI in burst	0.92	0.05
ns rate	0.91	-0.13
% spikes in burst	0.86	0.08
correlation	0.84	0.04
cv of IBI	0.65	-.5
# elects at peak	0.57	0.79
ns duration	0.56	.77
burst duration	0.52	-.47

Table 2: The table is the loadings of the PCA created with all variables at plate level. Similar to the PCA at the well level, the first PC dimension is synonimous with activity rate while the second PC dimension is responsible for network features and some bursting regularity.