Longitudinal analysis of AF in NHP baseline in vivo retinal images

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Computer vision objectives

- Utilize NHP eye imaging data to develop an automated computer vision software algorithm for the automated detection and quantification of hyper-fluorescent signals on fundus fluorescence images
- Identify the presence of auto-fluorescent signal at prior to injection
- Compare pre- and post-injection images for Visit 1 (prior to surgery-induced disease) to determine if there are increased number of hyper-fluorescent puncta after injection (determine specificity of methodology)
- Compare pre- and post-injection images for Visit 2 (~1 month after surgery-induced disease) to determine if there are increased number of hyper-fluorescent puncta after injection
- Compare Visit 1 and Visit 2 post-injection images (by same time point(s), by eye)

Summary of data & findings

- 24 eyes from 12 NHP over 2 visits 3 months apart
- AF channel images were acquired prior to and 2 min, 5 min, 15 min & 20 min post dye injection
- 2 of 13 eyes exhibit no auto-fluorescent (AF) puncta prior to injection

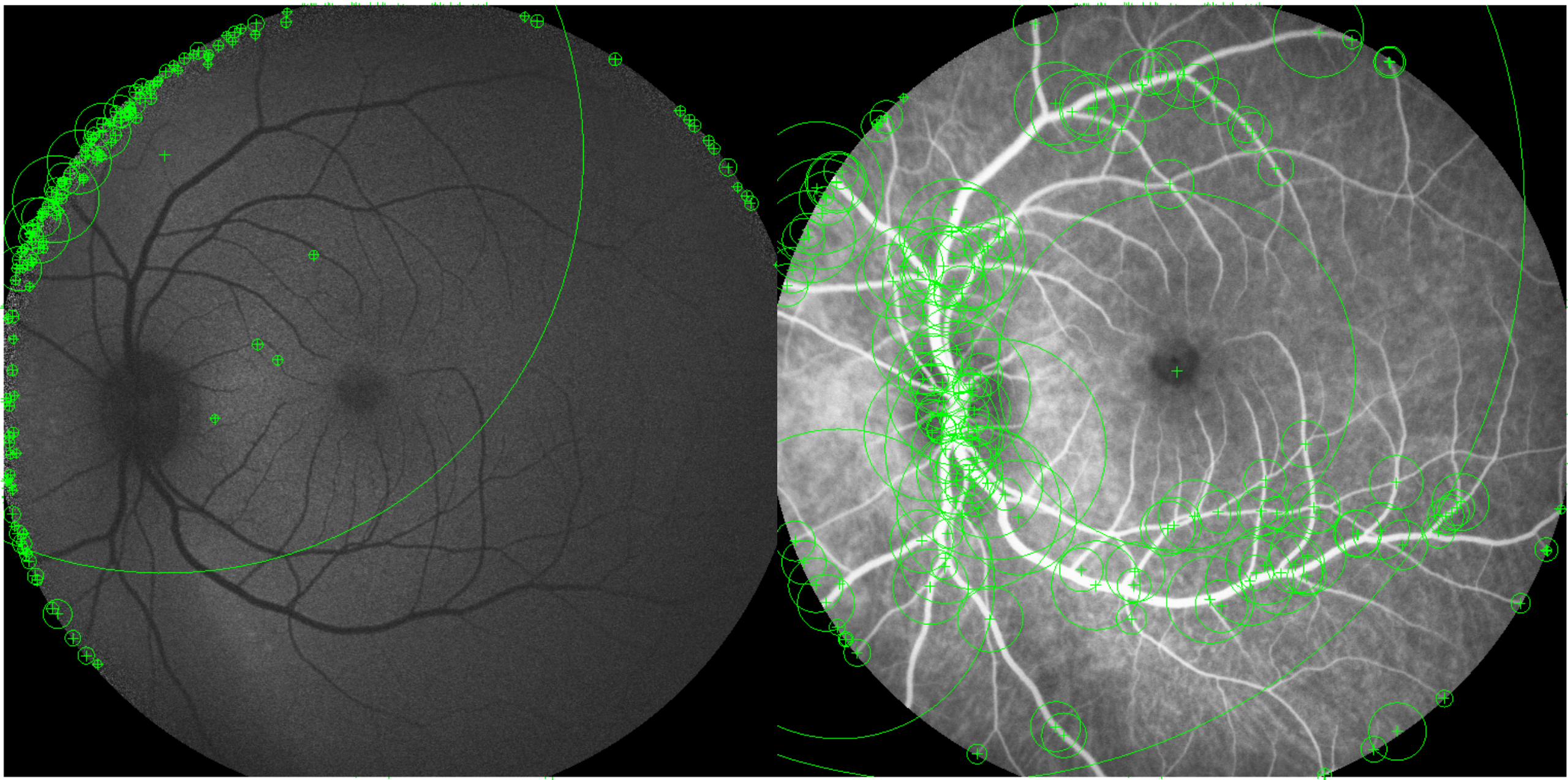
- Multiple analysis parameters to optimize:

1. Detection -> contrast threshold, edge threshold, #layers in SIFT octave, Gauss filter sigma
2. Matching -> method, match threshold, max. ratio, distance metric, uniqueness

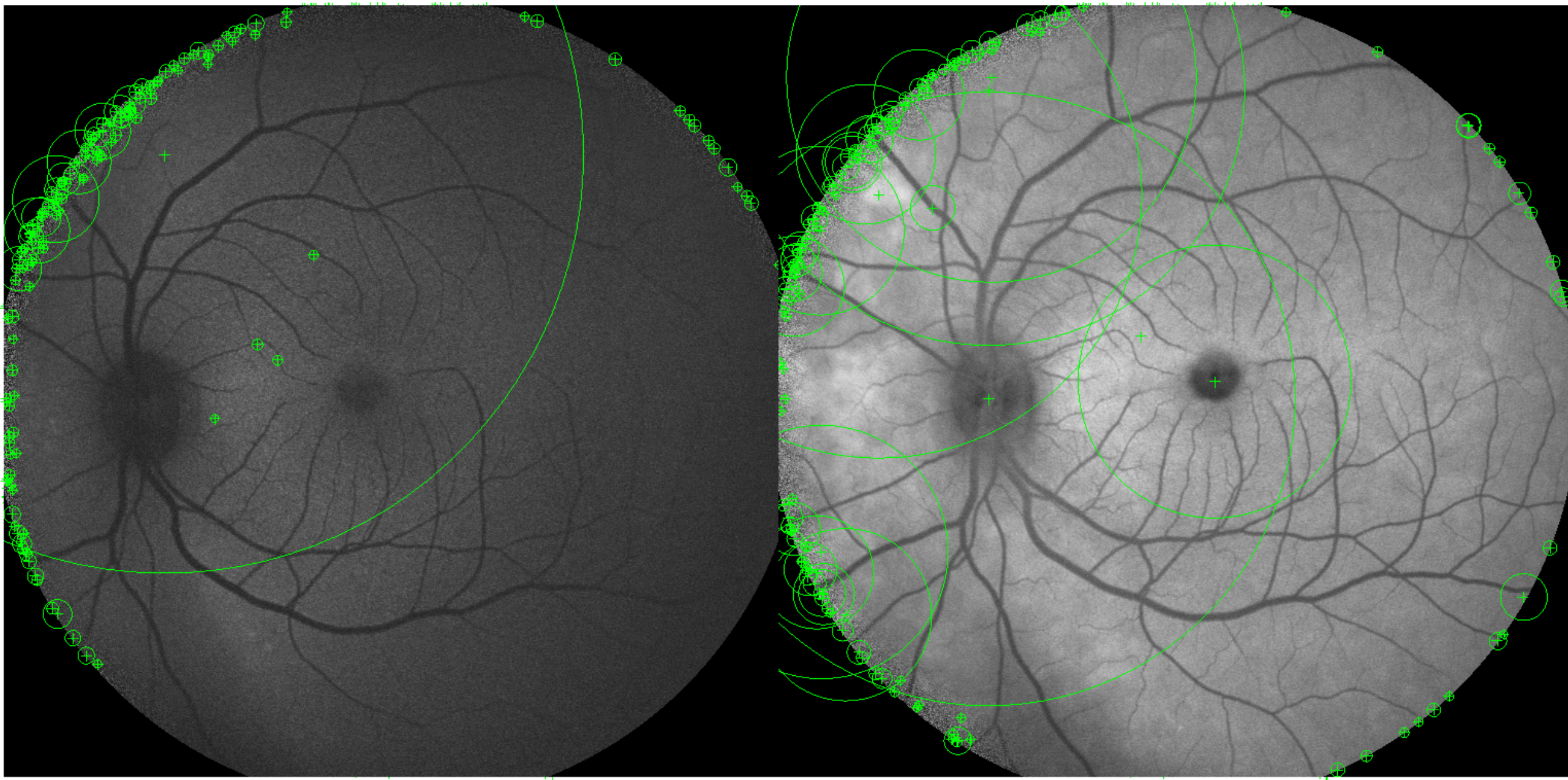
Number of detected AF puncta per eye

		Pre-inj Visit1	Post2min Visit1	Post5min Visit1	Post15min Visit1	Post30min Visit1	Pre-inj Visit2	Post2min Visit2	Post5min Visit2	Post 15min Visit2	Post30 min Visit2
Cyno 170395	OD	1	0	0	0	0	0	0	1	0	0
Cyno 170395	OS	na	na	na	0	0	0	0	0	0	0
Cyno 180424	OD	na	na	na	na	na	0	0	0	0	0
Cyno 180424	OS	0	0	0	0	0	0	0	0	0	0
Cyno 191797	OD	na	na	na	na	na	0	0	0	0	0
Cyno 191797	OS	0	0	0	0	0	0	na	0	0	0
Cyno 191800	OD	na	na	na	na	na	0	0	0	0	0
Cyno 191800	OS	0	0	0	0	0	0	0	0	0	0
Cyno 191815	OD	na	na	na	na	0	0	0	0	0	0
Cyno 191815	OS	0	0	0	0	0	0	0	0	0	0
Cyno 191817	OD	na	na	na	na	na	0	0	0	0	0
Cyno 191817	OS	0	0	0	0	0	0	0	0	0	0
Cyno 191823	OD	na	na	na	na	na	0	0	0	0	0
Cyno 191823	OS	0	0	0	0	0	0	0	0	0	0
Cyno 200188	OD	0	0	0	0	0	0	0	0	0	0
Cyno 200188	OS	3	2	2	2	2	2	2	2	2	2
Cyno 200190	OD	na	na	na	na	na	0	0	0	0	0
Cyno 200190	OS	0	0	0	0	0	0	0	0	0	0
Cyno 200193	OD	na	na	na	na	na	0	0	0	0	0
Cyno 200193	OS	0	0	0	0	0	0	0	0	0	0
Cyno 200217	OD	na	na	na	na	0	0	0	0	0	0
Cyno 200217	OS	0	0	0	0	0	0	0	0	0	0
Cyno 200251	OD	na	na	na	na	na	0	0	0	0	0
Cyno 200251	OS	0	0	0	0	0	0	0	0	0	0

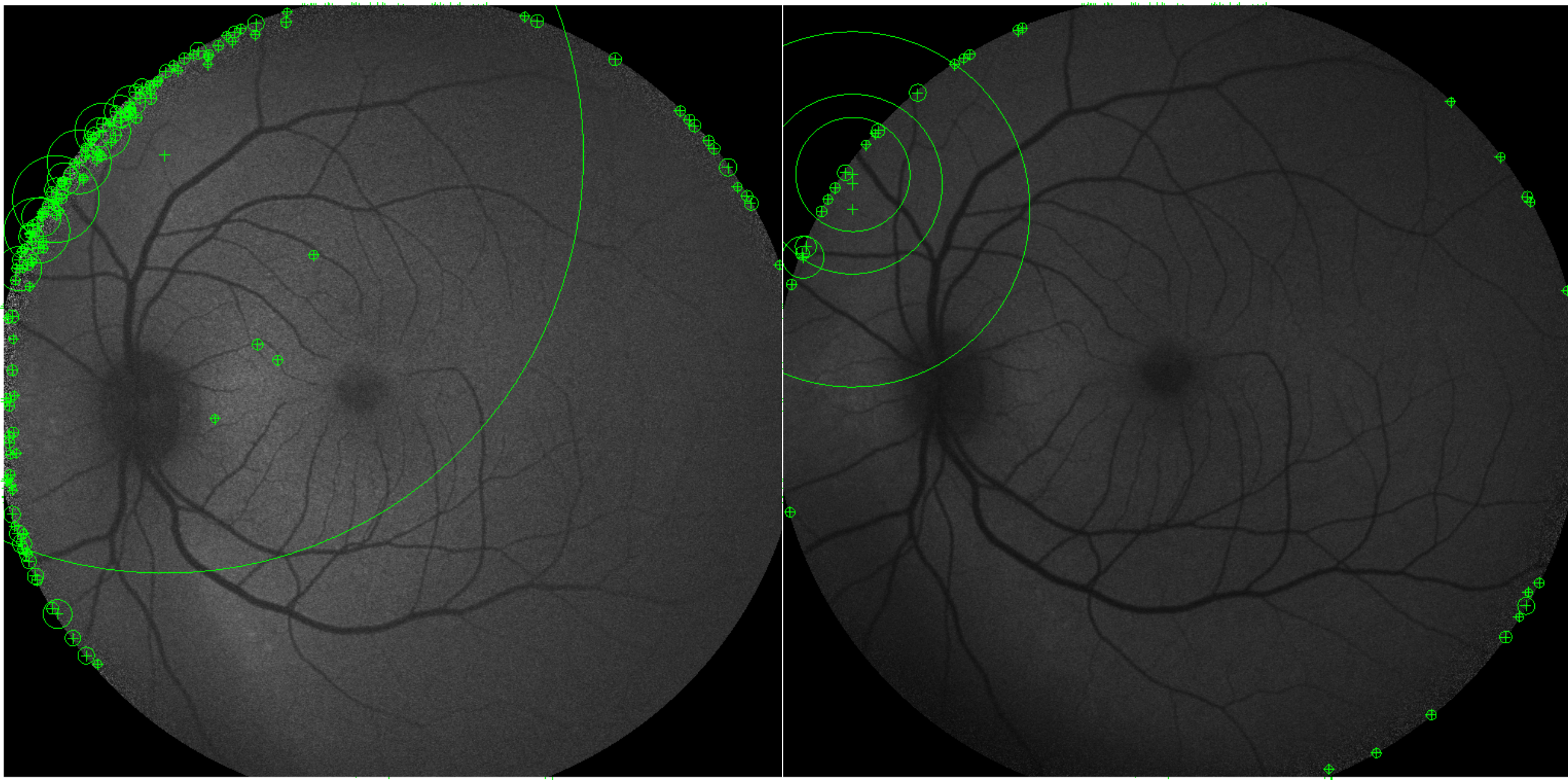
Cyno 200193 OS, V1 Pre-inj vs V1 Post 2min



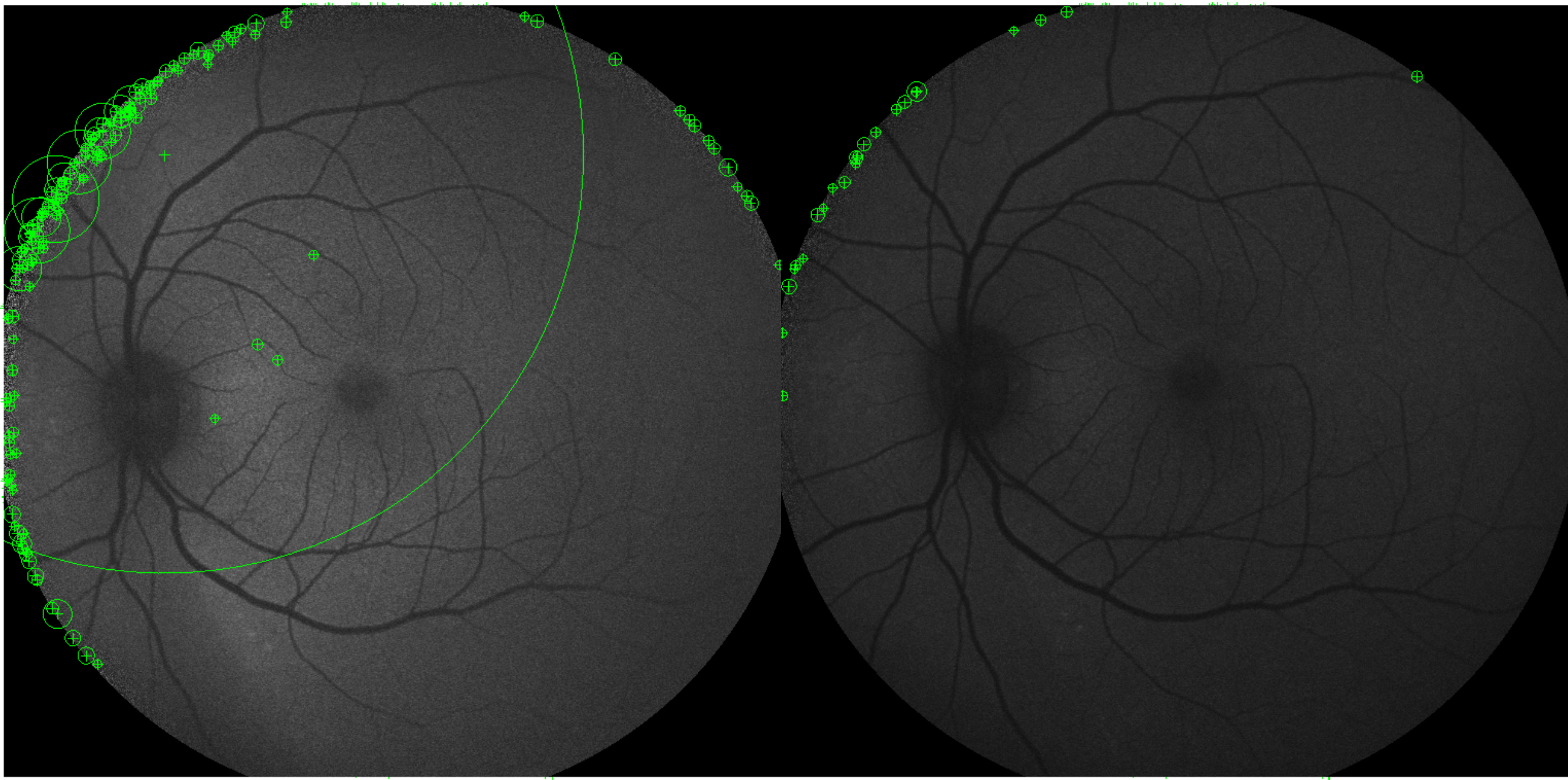
Cyno 200193 OS, V1 Pre-inj vs V1 Post 5min



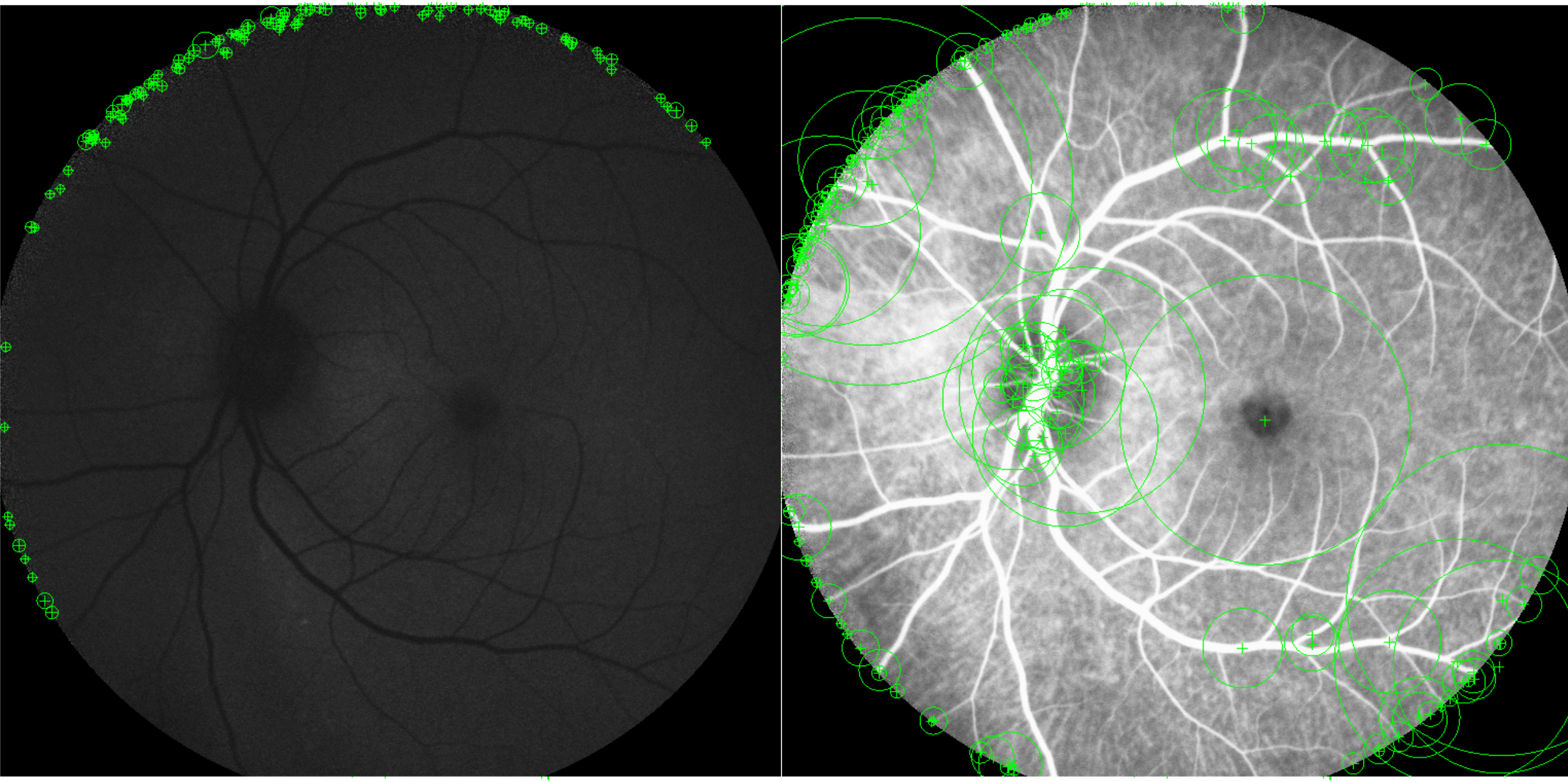
Cyno 200193 OS, V1 Pre-inj vs V1 Post 15min



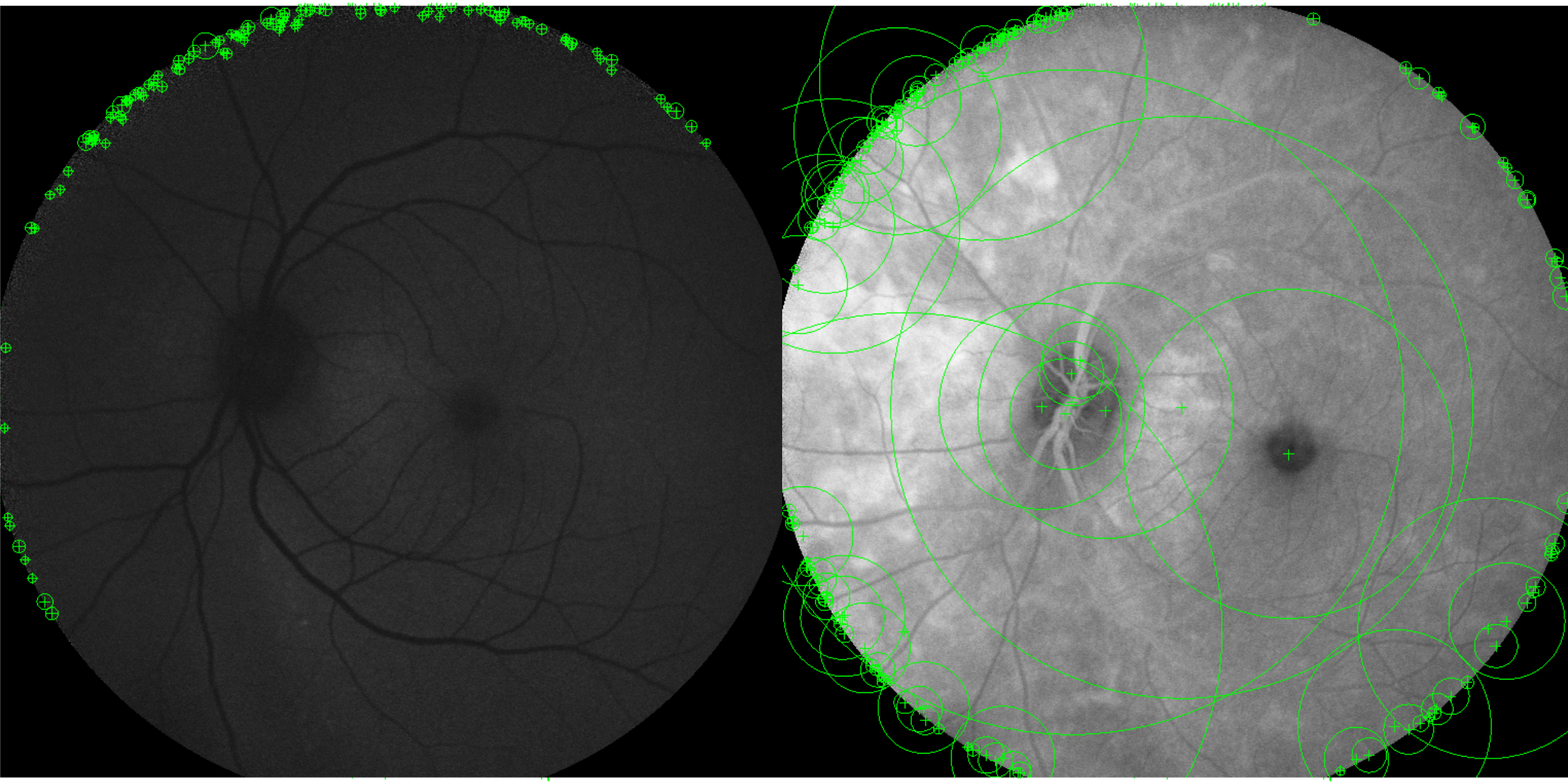
Cyno 200193 OS, V1 Pre-inj vs V1 Post 30min



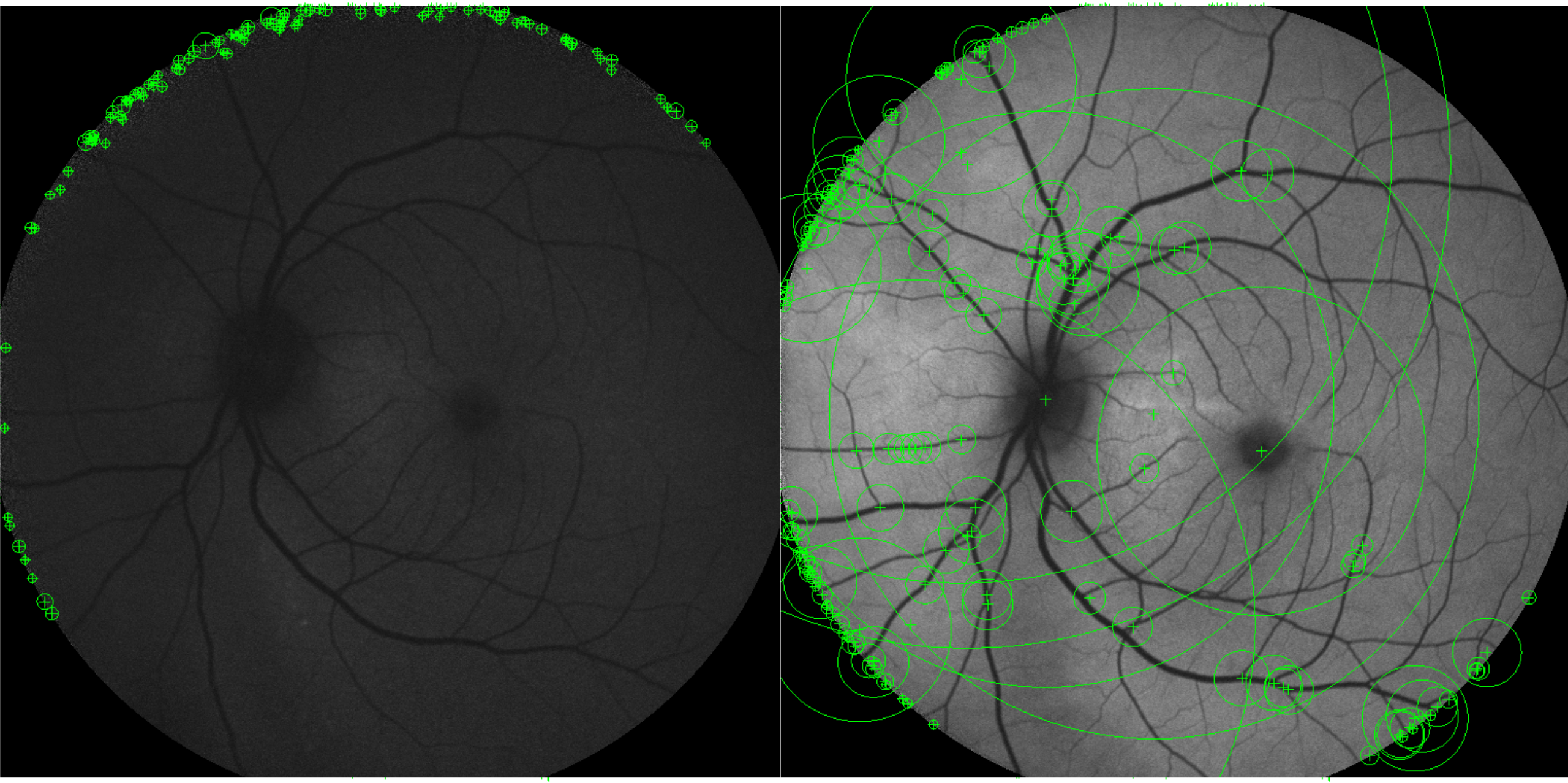
Cyno 200193 OS, V2 Pre-inj vs V2 Post 2min



Cyno 200193 OS, V2 Pre-inj vs V2 Post 5min



Cyno 200193 OS, V2 Pre-inj vs V2 Post 15min



Cyno 200193 OS, V2 Pre-inj vs V2 Post 30min