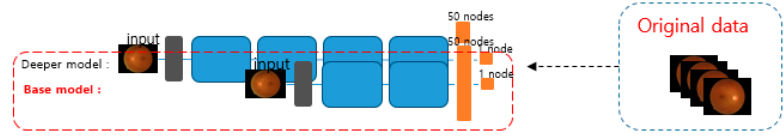


# Supplementary materials

**Figure S1.** MAE values and scatter plots for all regions from base model trained with the actual dataset.

- Mean of means : 10.23
- Mean of std : 2.56



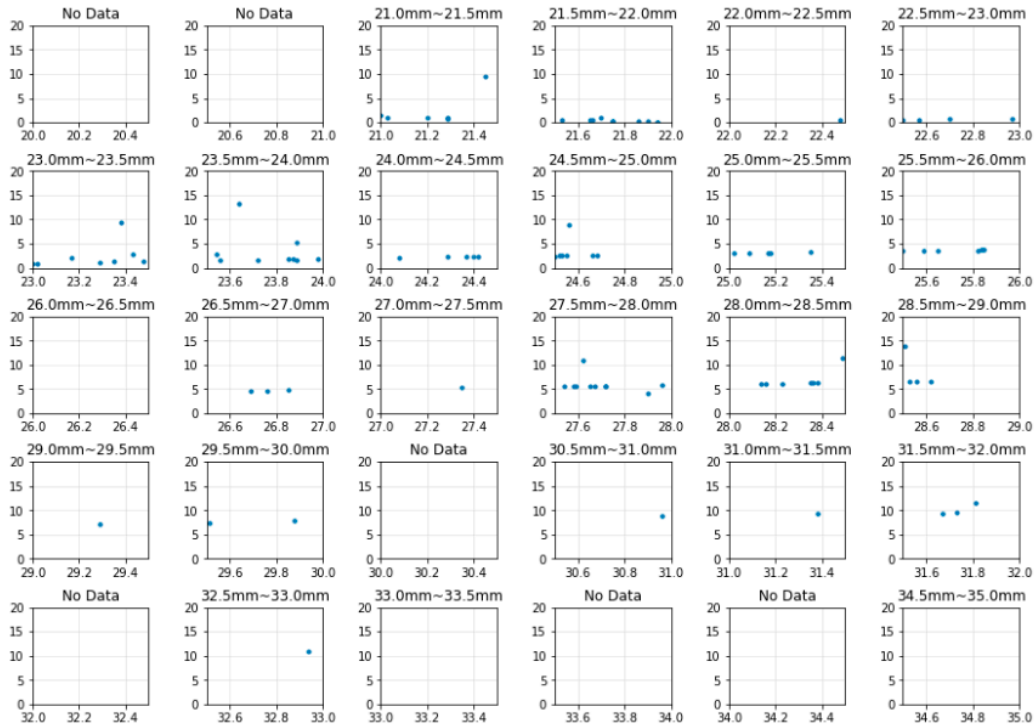
Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 2.4592545,
'21.5mm~22.0mm': 0.37842387,
'22.0mm~22.5mm': 0.38744354,
'22.5mm~23.0mm': 0.60257244,
'23.0mm~23.5mm': 2.4724464,
'23.5mm~24.0mm': 3.5078242,
'24.0mm~24.5mm': 2.2390323,
'24.5mm~25.0mm': 3.4080052,
'25.0mm~25.5mm': 3.0854733,
'25.5mm~26.0mm': 3.578832,
'26.0mm~26.5mm': 56.423103,
'26.5mm~27.0mm': 4.6934476,
'27.0mm~27.5mm': 5.276781,
'27.5mm~28.0mm': 6.006219,
'28.0mm~28.5mm': 6.9323716,
'28.5mm~29.0mm': 8.343859,
'29.0mm~29.5mm': 26.226353,
'29.5mm~30.0mm': 23.300264,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 8.768017,
'31.0mm~31.5mm': 9.299953,
'31.5mm~32.0mm': 10.181738,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 10.866781,
'33.0mm~33.5mm': 21.205484,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 25.924469
```

Std of each region

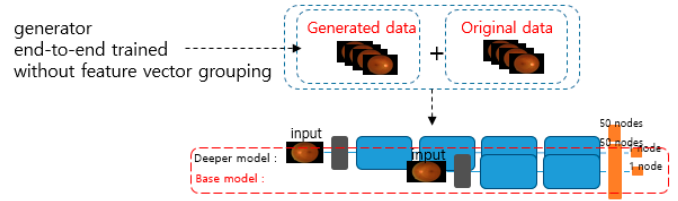
```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 3.196595,
'21.5mm~22.0mm': 0.27466756,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 0.16617818,
'23.0mm~23.5mm': 2.6451042,
'23.5mm~24.0mm': 3.6246045,
'24.0mm~24.5mm': 0.1242797,
'24.5mm~25.0mm': 2.2278416,
'25.0mm~25.5mm': 0.11285459,
'25.5mm~26.0mm': 0.14609131,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 0.06548955,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 1.732748,
'28.0mm~28.5mm': 1.8040878,
'28.5mm~29.0mm': 3.1993973,
'29.0mm~29.5mm': 19.009571,
'29.5mm~30.0mm': 22.22187,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 0.9192169,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

Scatter plots



**Figure S2.** MAE values and scatter plots for all regions from base model trained with original images and generated images by end-to-end trained generator without feature vector grouping.

- Mean of means : 8.32
- Mean of std : 6.92



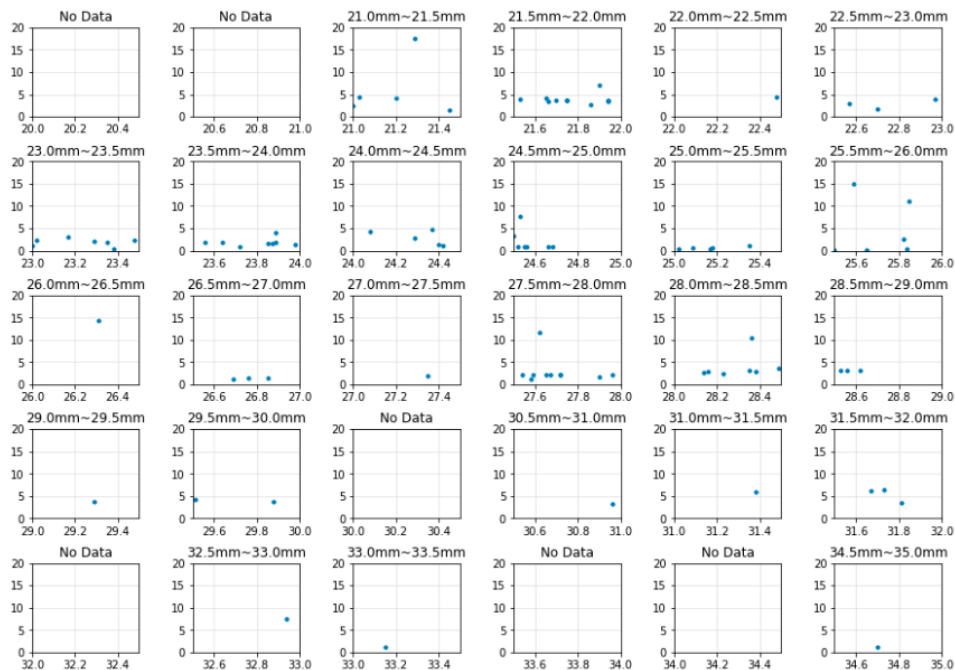
### Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 8.880361,
'21.5mm~22.0mm': 3.931334,
'22.0mm~22.5mm': 4.5033073,
'22.5mm~23.0mm': 12.639669,
'23.0mm~23.5mm': 4.884795,
'23.5mm~24.0mm': 4.130076,
'24.0mm~24.5mm': 2.8733373,
'24.5mm~25.0mm': 2.1875122,
'25.0mm~25.5mm': 0.5824772,
'25.5mm~26.0mm': 4.8507056,
'26.0mm~26.5mm': 14.390127,
'26.5mm~27.0mm': 1.3836111,
'27.0mm~27.5mm': 1.9082165,
'27.5mm~28.0mm': 2.9659476,
'28.0mm~28.5mm': 4.0170608,
'28.5mm~29.0mm': 7.6153965,
'29.0mm~29.5mm': 54.54628,
'29.5mm~30.0mm': 39.126453,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 3.164631,
'31.0mm~31.5mm': 5.938217,
'31.5mm~32.0mm': 5.3221707,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 7.4982147,
'33.0mm~33.5mm': 1.1458778,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 1.0765381
```

### Std of each region

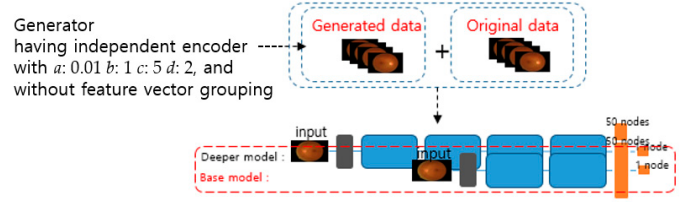
```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 8.346355,
'21.5mm~22.0mm': 1.0973632,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 16.906557,
'23.0mm~23.5mm': 8.069873,
'23.5mm~24.0mm': 6.425978,
'24.0mm~24.5mm': 1.4890966,
'24.5mm~25.0mm': 2.3763638,
'25.0mm~25.5mm': 0.2692178,
'25.5mm~26.0mm': 5.9090595,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 0.10199881,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 2.8815517,
'28.0mm~28.5mm': 2.6171339,
'28.5mm~29.0mm': 7.712923,
'29.0mm~29.5mm': 50.73787,
'29.5mm~30.0mm': 49.784103,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 1.3239928,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

### Scatter plots



**Figure S3.** MAE values and scatter plots for all regions from base model trained with original images and generated images by generator having independent encoder with *a*: 0.01 *b*: 1 *c*: 5 *d*: 2, and without feature vector grouping.

- Mean of means : 5.79
- Mean of std : 1.52



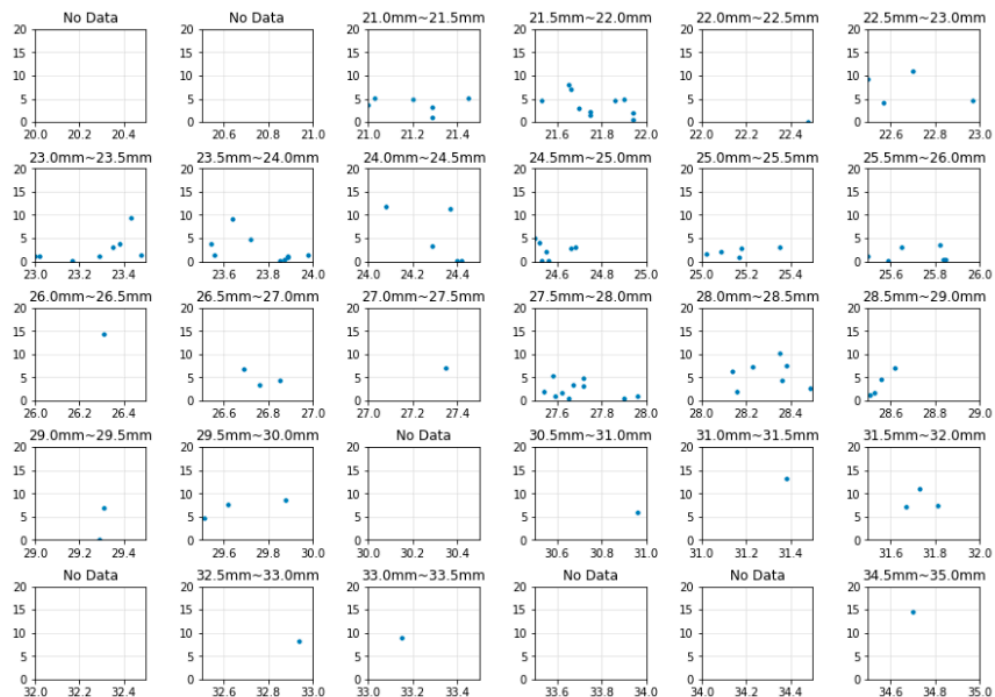
### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 3.7788713,  
 '21.5mm~22.0mm': 3.8504531,  
 '22.0mm~22.5mm': 0.038928986,  
 '22.5mm~23.0mm': 7.260945,  
 '23.0mm~23.5mm': 2.5924807,  
 '23.5mm~24.0mm': 2.5386713,  
 '24.0mm~24.5mm': 5.326002,  
 '24.5mm~25.0mm': 2.3989081,  
 '25.0mm~25.5mm': 2.0575612,  
 '25.5mm~26.0mm': 1.4128532,  
 '26.0mm~26.5mm': 14.207373,  
 '26.5mm~27.0mm': 4.794636,  
 '27.0mm~27.5mm': 7.0591125,  
 '27.5mm~28.0mm': 2.3301806,  
 '28.0mm~28.5mm': 5.7683187,  
 '28.5mm~29.0mm': 3.6893525,  
 '29.0mm~29.5mm': 3.40351,  
 '29.5mm~30.0mm': 6.9926987,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 5.9998894,  
 '31.0mm~31.5mm': 13.261309,  
 '31.5mm~32.0mm': 8.545929,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 8.205338,  
 '33.0mm~33.5mm': 8.86858,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 14.579376

### Std of each region

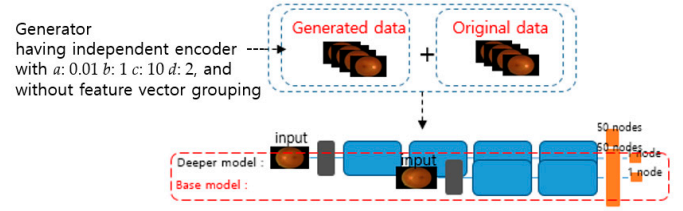
'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 1.4939004,  
 '21.5mm~22.0mm': 2.2804992,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 2.9523568,  
 '23.0mm~23.5mm': 2.790776,  
 '23.5mm~24.0mm': 2.7384357,  
 '24.0mm~24.5mm': 5.224051,  
 '24.5mm~25.0mm': 1.687358,  
 '25.0mm~25.5mm': 0.84560263,  
 '25.5mm~26.0mm': 1.3555503,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 1.417208,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 1.7333547,  
 '28.0mm~28.5mm': 2.7386553,  
 '28.5mm~29.0mm': 2.3898509,  
 '29.0mm~29.5mm': 3.3774061,  
 '29.5mm~30.0mm': 1.6155697,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 1.746381,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

### Scatter plots



**Figure S4.** MAE values and scatter plots for all regions from base model trained with original images and generated images by generator having independent encoder with  $a$ : 0.01  $b$ : 10  $c$ : 5  $d$ : 2, and without feature vector grouping.

- Mean of means : 7.37
- Mean of std : 3.51



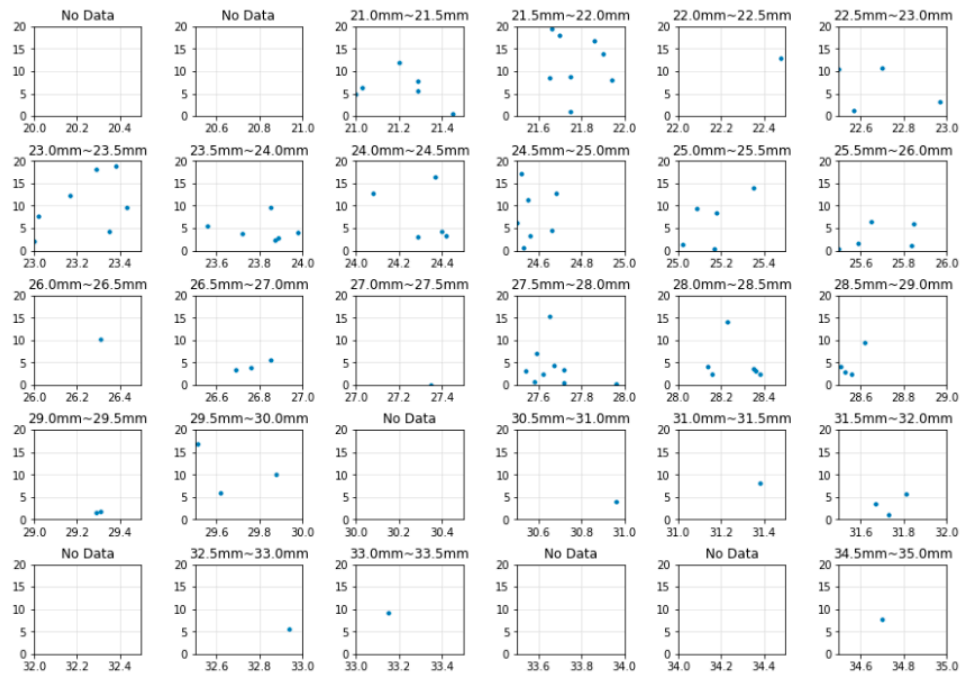
### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 6.168817,  
 '21.5mm~22.0mm': 14.411629,  
 '22.0mm~22.5mm': 12.839054,  
 '22.5mm~23.0mm': 6.4296236,  
 '23.0mm~23.5mm': 12.75798,  
 '23.5mm~24.0mm': 11.078311,  
 '24.0mm~24.5mm': 7.928023,  
 '24.5mm~25.0mm': 7.9988794,  
 '25.0mm~25.5mm': 6.637216,  
 '25.5mm~26.0mm': 6.30315,  
 '26.0mm~26.5mm': 10.106268,  
 '26.5mm~27.0mm': 4.327043,  
 '27.0mm~27.5mm': 0.08541107,  
 '27.5mm~28.0mm': 6.8209496,  
 '28.0mm~28.5mm': 7.79524,  
 '28.5mm~29.0mm': 4.7657866,  
 '29.0mm~29.5mm': 1.6623497,  
 '29.5mm~30.0mm': 11.000404,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 3.9288998,  
 '31.0mm~31.5mm': 8.043528,  
 '31.5mm~32.0mm': 3.4267273,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 5.4897156,  
 '33.0mm~33.5mm': 9.208309,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 7.6469193

### Std of each region

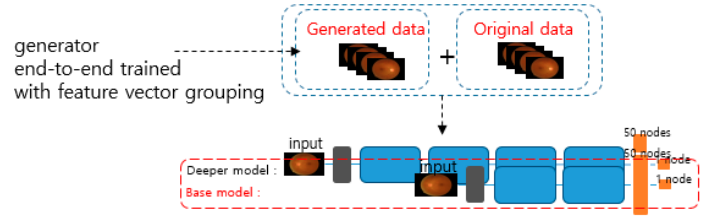
'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 3.4027002,  
 '21.5mm~22.0mm': 7.656317,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 4.2571864,  
 '23.0mm~23.5mm': 8.426371,  
 '23.5mm~24.0mm': 9.465873,  
 '24.0mm~24.5mm': 5.5413465,  
 '24.5mm~25.0mm': 5.4733167,  
 '25.0mm~25.5mm': 5.170589,  
 '25.5mm~26.0mm': 7.5777445,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 0.96441424,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 9.088878,  
 '28.0mm~28.5mm': 7.9352665,  
 '28.5mm~29.0mm': 2.774759,  
 '29.0mm~29.5mm': 0.091362,  
 '29.5mm~30.0mm': 4.5131555,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 1.887311,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

### Scatter plots



**Figure S5.** MAE values and scatter plots for all regions from base model trained with original images and generated images by end-to-end trained generator with feature vector grouping.

- Mean of means : 4.29
- Mean of std : 0.43



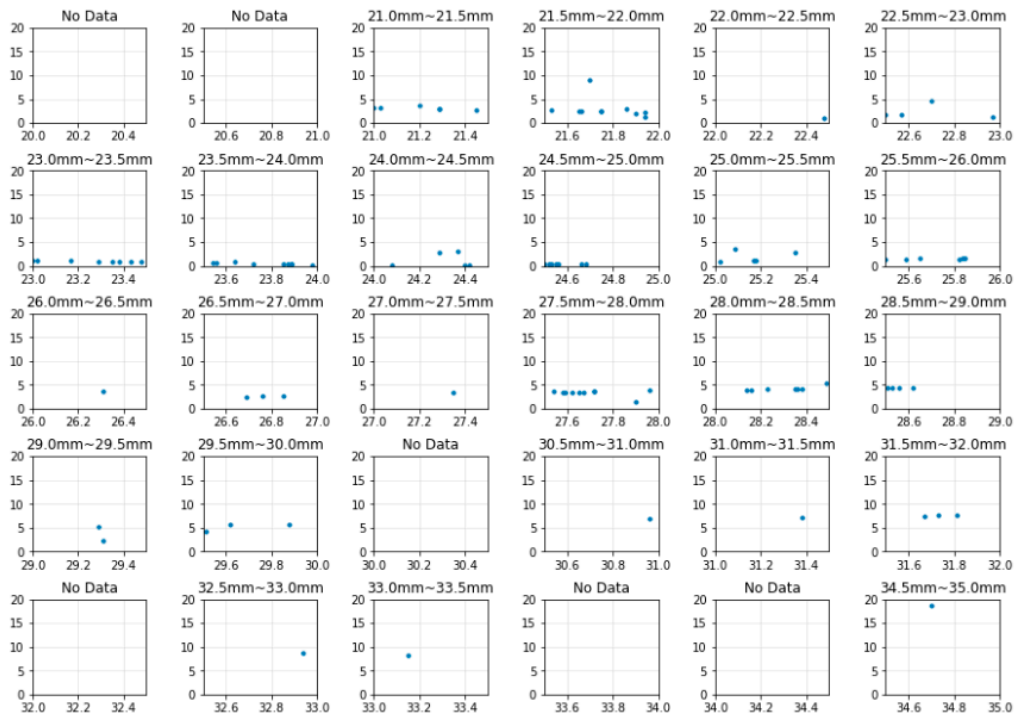
### Mean of each region

'20.0mm~20.5mm': nan,  
'20.5mm~21.0mm': nan,  
'21.0mm~21.5mm': 3.1036863,  
'21.5mm~22.0mm': 2.9839313,  
'22.0mm~22.5mm': 0.94244766,  
'22.5mm~23.0mm': 2.3125634,  
'23.0mm~23.5mm': 0.91692615,  
'23.5mm~24.0mm': 0.44384682,  
'24.0mm~24.5mm': 1.2696984,  
'24.5mm~25.0mm': 0.38372585,  
'25.0mm~25.5mm': 1.8000866,  
'25.5mm~26.0mm': 1.4628086,  
'26.0mm~26.5mm': 3.6012135,  
'26.5mm~27.0mm': 2.5868156,  
'27.0mm~27.5mm': 3.4153767,  
'27.5mm~28.0mm': 3.306769,  
'28.0mm~28.5mm': 4.2547183,  
'28.5mm~29.0mm': 4.3532963,  
'29.0mm~29.5mm': 3.6545153,  
'29.5mm~30.0mm': 5.156879,  
'30.0mm~30.5mm': nan,  
'30.5mm~31.0mm': 6.7801476,  
'31.0mm~31.5mm': 7.220785,  
'31.5mm~32.0mm': 7.5355744,  
'32.0mm~32.5mm': nan,  
'32.5mm~33.0mm': 8.760254,  
'33.0mm~33.5mm': 8.165199,  
'33.5mm~34.0mm': nan,  
'34.0mm~34.5mm': nan,  
'34.5mm~35.0mm': 18.646791

### Std of each region

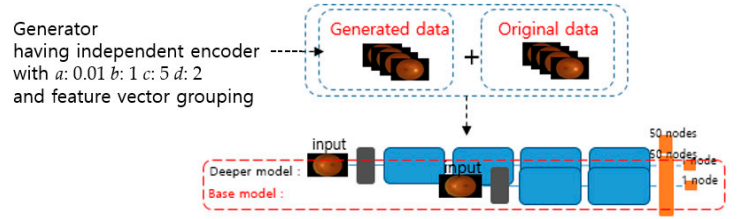
'20.0mm~20.5mm': nan,  
'20.5mm~21.0mm': nan,  
'21.0mm~21.5mm': 0.34388524,  
'21.5mm~22.0mm': 2.0963128,  
'22.0mm~22.5mm': 0.0,  
'22.5mm~23.0mm': 1.4227408,  
'23.0mm~23.5mm': 0.16822547,  
'23.5mm~24.0mm': 0.19074535,  
'24.0mm~24.5mm': 1.3260354,  
'24.5mm~25.0mm': 0.06583249,  
'25.0mm~25.5mm': 1.0790671,  
'25.5mm~26.0mm': 0.15892975,  
'26.0mm~26.5mm': 0.0,  
'26.5mm~27.0mm': 0.06548955,  
'27.0mm~27.5mm': 0.0,  
'27.5mm~28.0mm': 0.6532171,  
'28.0mm~28.5mm': 0.42102247,  
'28.5mm~29.0mm': 0.07127987,  
'29.0mm~29.5mm': 1.4556341,  
'29.5mm~30.0mm': 0.7359889,  
'30.0mm~30.5mm': nan,  
'30.5mm~31.0mm': 0.0,  
'31.0mm~31.5mm': 0.0,  
'31.5mm~32.0mm': 0.032316852,  
'32.0mm~32.5mm': nan,  
'32.5mm~33.0mm': 0.0,  
'33.0mm~33.5mm': 0.0,  
'33.5mm~34.0mm': nan,  
'34.0mm~34.5mm': nan,  
'34.5mm~35.0mm': 0.0

### Scatter plots



**Figure S6.** MAE values and scatter plots for all regions from base model trained with original images and generated images by generator having independent encoder with *a*: 0.01 *b*: 1 *c*: 5 *d*: 2, and feature vector grouping.

- Mean of means : 3.96
- Mean of std : 0.23



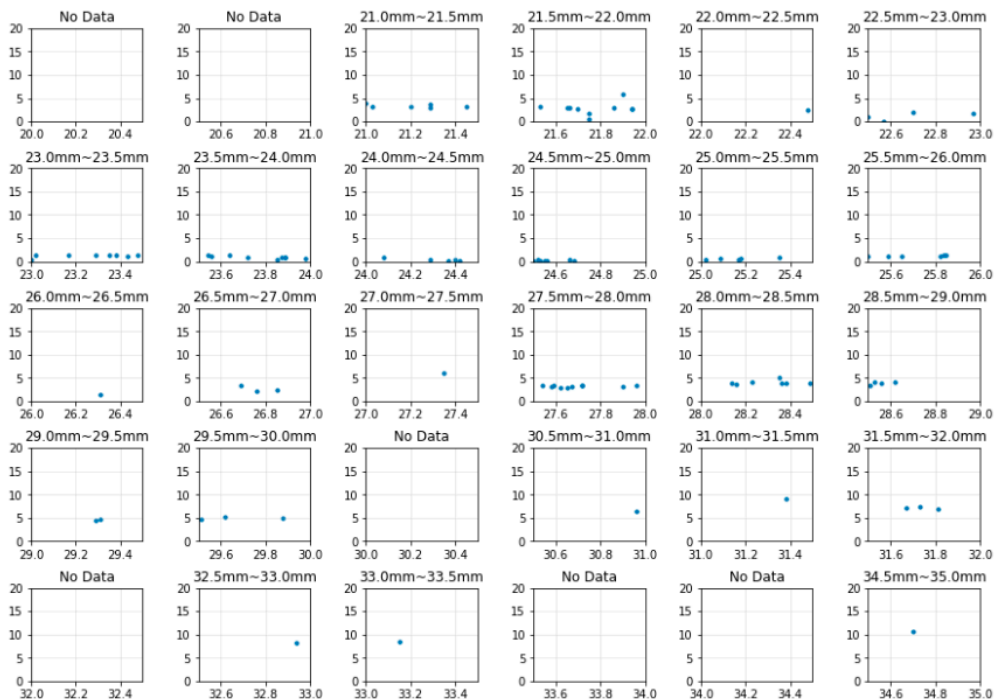
### Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 3.3826733,
'21.5mm~22.0mm': 2.7926774,
'22.0mm~22.5mm': 2.4314518,
'22.5mm~23.0mm': 1.1316018,
'23.0mm~23.5mm': 1.19625,
'23.5mm~24.0mm': 0.8831128,
'24.0mm~24.5mm': 0.3102108,
'24.5mm~25.0mm': 0.14299856,
'25.0mm~25.5mm': 0.5720528,
'25.5mm~26.0mm': 1.1943865,
'26.0mm~26.5mm': 1.5033398,
'26.5mm~27.0mm': 2.703172,
'27.0mm~27.5mm': 6.0056076,
'27.5mm~28.0mm': 3.191697,
'28.0mm~28.5mm': 4.046601,
'28.5mm~29.0mm': 3.9492579,
'29.0mm~29.5mm': 4.600168,
'29.5mm~30.0mm': 5.013643,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 6.3735676,
'31.0mm~31.5mm': 9.117182,
'31.5mm~32.0mm': 7.1219115,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 8.320696,
'33.0mm~33.5mm': 8.362305,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 10.728962
```

### Std of each region

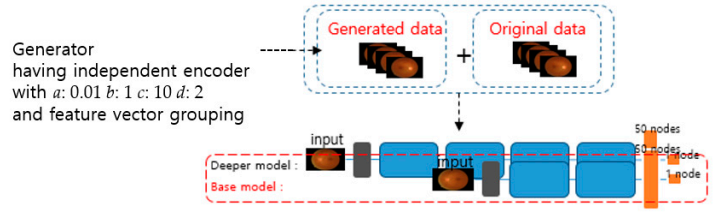
```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 0.34901643,
'21.5mm~22.0mm': 1.2881829,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 0.7162294,
'23.0mm~23.5mm': 0.2949478,
'23.5mm~24.0mm': 0.3001848,
'24.0mm~24.5mm': 0.28329623,
'24.5mm~25.0mm': 0.1287715,
'25.0mm~25.5mm': 0.13909847,
'25.5mm~26.0mm': 0.14937848,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 0.48486304,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 0.19360441,
'28.0mm~28.5mm': 0.44908443,
'28.5mm~29.0mm': 0.27873078,
'29.0mm~29.5mm': 0.12677765,
'29.5mm~30.0mm': 0.21489385,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 0.20062536,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

### Scatter plots



**Figure S7.** MAE values and scatter plots for all regions from base model trained with original images and generated images by generator having independent encoder with  $a$ : 0.01  $b$ : 1  $c$ : 10  $d$ : 2, and feature vector grouping.

- Mean of means : 4.09
- Mean of std : 0.16



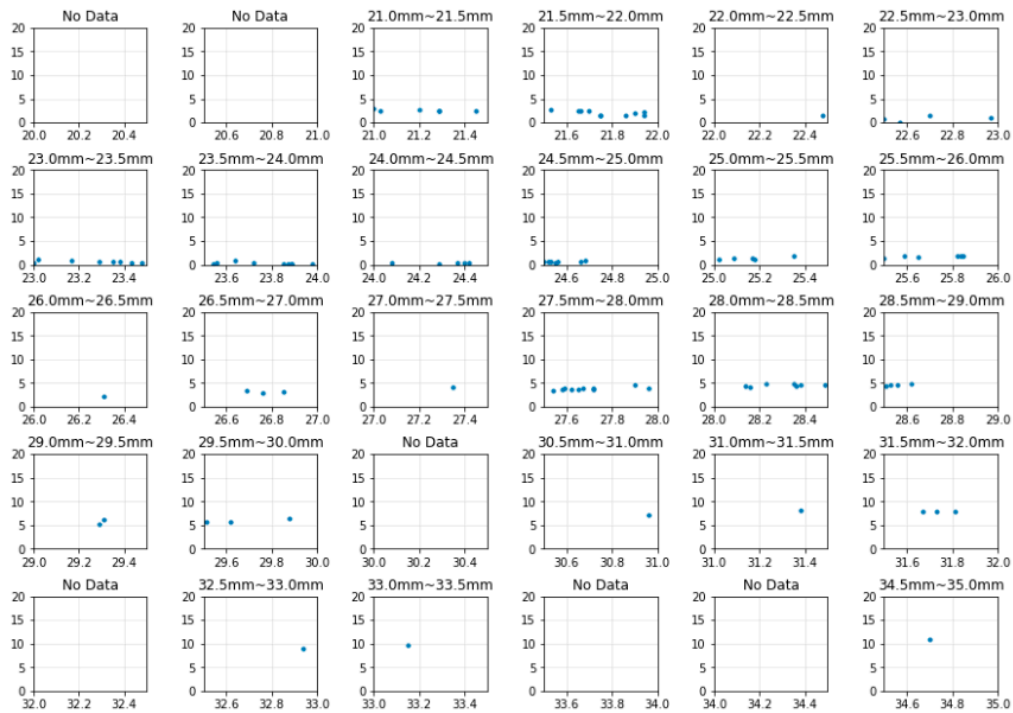
### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 2.6137512,  
 '21.5mm~22.0mm': 2.0032365,  
 '22.0mm~22.5mm': 1.402731,  
 '22.5mm~23.0mm': 0.7827072,  
 '23.0mm~23.5mm': 0.61491394,  
 '23.5mm~24.0mm': 0.24337006,  
 '24.0mm~24.5mm': 0.34994394,  
 '24.5mm~25.0mm': 0.6193641,  
 '25.0mm~25.5mm': 1.3317524,  
 '25.5mm~26.0mm': 1.7313528,  
 '26.0mm~26.5mm': 2.222105,  
 '26.5mm~27.0mm': 3.083023,  
 '27.0mm~27.5mm': 4.0460606,  
 '27.5mm~28.0mm': 3.804644,  
 '28.0mm~28.5mm': 4.576015,  
 '28.5mm~29.0mm': 4.6133304,  
 '29.0mm~29.5mm': 5.644353,  
 '29.5mm~30.0mm': 5.9074078,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 7.076603,  
 '31.0mm~31.5mm': 8.026262,  
 '31.5mm~32.0mm': 7.861071,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 9.026257,  
 '33.0mm~33.5mm': 9.737331,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 10.908726

### Std of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 0.16274923,  
 '21.5mm~22.0mm': 0.4682484,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 0.48322168,  
 '23.0mm~23.5mm': 0.2279768,  
 '23.5mm~24.0mm': 0.27148566,  
 '24.0mm~24.5mm': 0.08757359,  
 '24.5mm~25.0mm': 0.12719606,  
 '25.0mm~25.5mm': 0.21592318,  
 '25.5mm~26.0mm': 0.1519172,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 0.1673558,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 0.31733,  
 '28.0mm~28.5mm': 0.24897823,  
 '28.5mm~29.0mm': 0.16208477,  
 '29.0mm~29.5mm': 0.4572153,  
 '29.5mm~30.0mm': 0.28630105,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 0.038472436,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

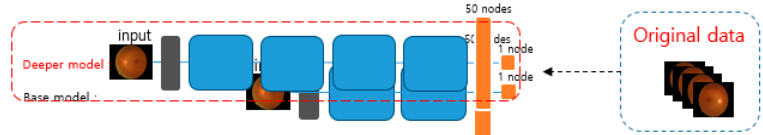
### Scatter plots





**Figure S8.** MAE values and scatter plots for all regions from deeper model trained with the actual dataset.

- Mean of means : 5.49
- Mean of std : 1.43



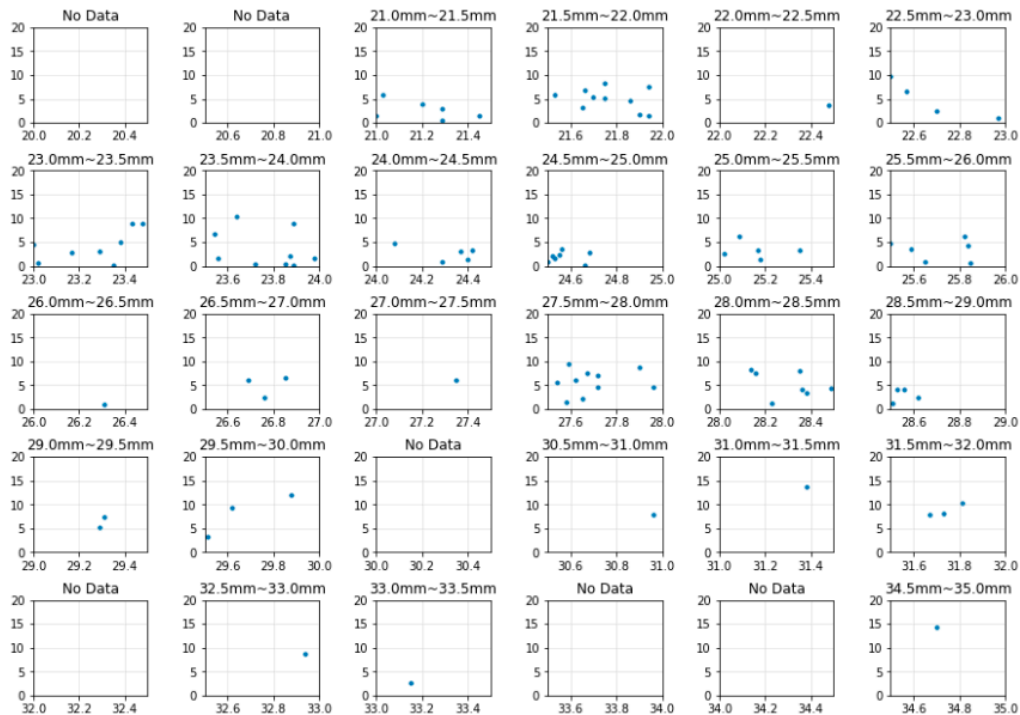
### Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 2.6482956,
'21.5mm~22.0mm': 5.0030546,
'22.0mm~22.5mm': 3.7371616,
'22.5mm~23.0mm': 4.9337516,
'23.0mm~23.5mm': 4.2423058,
'23.5mm~24.0mm': 3.527913,
'24.0mm~24.5mm': 2.6761272,
'24.5mm~25.0mm': 1.8647804,
'25.0mm~25.5mm': 3.3363433,
'25.5mm~26.0mm': 3.860662,
'26.0mm~26.5mm': 1.0198097,
'26.5mm~27.0mm': 4.984485,
'27.0mm~27.5mm': 6.140543,
'27.5mm~28.0mm': 5.712847,
'28.0mm~28.5mm': 5.315742,
'28.5mm~29.0mm': 2.9551373,
'29.0mm~29.5mm': 6.3764153,
'29.5mm~30.0mm': 8.156392,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 7.767111,
'31.0mm~31.5mm': 13.7087,
'31.5mm~32.0mm': 8.754251,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 8.700365,
'33.0mm~33.5mm': 2.6404018,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 14.244726
```

### Std of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 1.8103594,
'21.5mm~22.0mm': 2.161484,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 3.4533057,
'23.0mm~23.5mm': 3.0943534,
'23.5mm~24.0mm': 3.6958737,
'24.0mm~24.5mm': 1.3793372,
'24.5mm~25.0mm': 1.0336838,
'25.0mm~25.5mm': 1.6362087,
'25.5mm~26.0mm': 2.0504122,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 1.8621608,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 2.4888093,
'28.0mm~28.5mm': 2.508202,
'28.5mm~29.0mm': 1.3017484,
'29.0mm~29.5mm': 1.1121922,
'29.5mm~30.0mm': 3.6689072,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 1.0635667,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

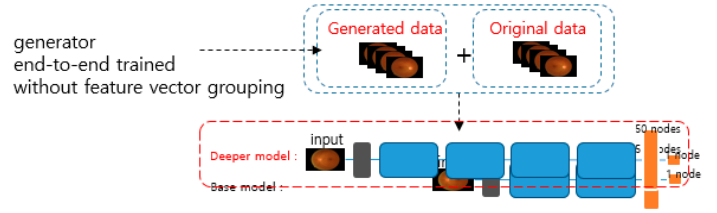
### Scatter plots





**Figure S9.** MAE values and scatter plots for all regions from deeper model trained with original images and generated images by end-to-end trained generator without feature vector grouping.

- Mean of means : 5.32
- Mean of std :1.21



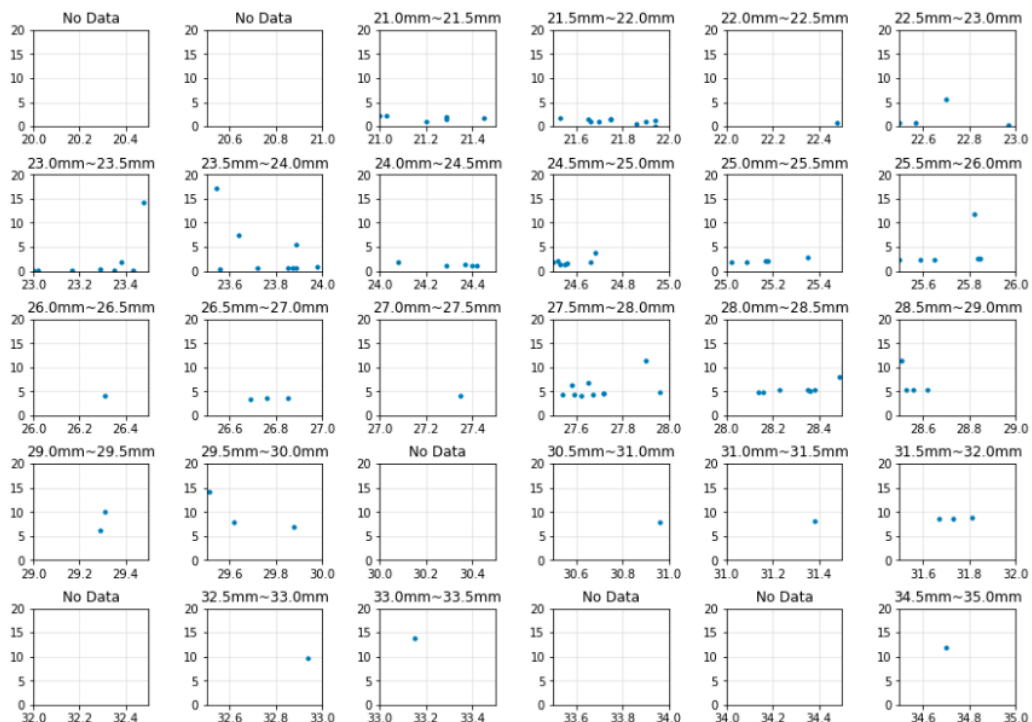
### Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 1.7497349,
'21.5mm~22.0mm': 1.0836322,
'22.0mm~22.5mm': 0.8196068,
'22.5mm~23.0mm': 1.7987089,
'23.0mm~23.5mm': 2.1355557,
'23.5mm~24.0mm': 3.729411,
'24.0mm~24.5mm': 1.3072869,
'24.5mm~25.0mm': 1.9236704,
'25.0mm~25.5mm': 2.0881295,
'25.5mm~26.0mm': 4.0291276,
'26.0mm~26.5mm': 4.0174656,
'26.5mm~27.0mm': 3.537812,
'27.0mm~27.5mm': 4.1210575,
'27.5mm~28.0mm': 5.5436296,
'28.0mm~28.5mm': 5.5648456,
'28.5mm~29.0mm': 6.871066,
'29.0mm~29.5mm': 8.005898,
'29.5mm~30.0mm': 9.652882,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 7.7574654,
'31.0mm~31.5mm': 8.151056,
'31.5mm~32.0mm': 8.609019,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 9.711304,
'33.0mm~33.5mm': 13.748524,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 11.787056
```

### Std of each region

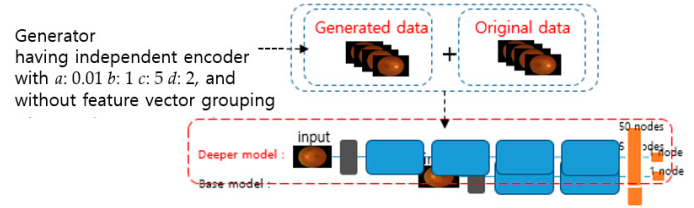
```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 0.37642777,
'21.5mm~22.0mm': 0.473679,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 2.1720712,
'23.0mm~23.5mm': 4.561931,
'23.5mm~24.0mm': 5.331165,
'24.0mm~24.5mm': 0.24127777,
'24.5mm~25.0mm': 0.7868213,
'25.0mm~25.5mm': 0.41005868,
'25.5mm~26.0mm': 3.516118,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 0.06546854,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 2.1375437,
'28.0mm~28.5mm': 1.0030724,
'28.5mm~29.0mm': 2.6324701,
'29.0mm~29.5mm': 1.9453402,
'29.5mm~30.0mm': 3.3051572,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 0.14289531,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

### Scatter plots



**Figure S10.** MAE values and scatter plots for all regions from deeper model trained with original images and generated images by generator having independent encoder with  $a: 0.01$   $b: 1$   $c: 5$   $d: 2$ , and without feature vector grouping.

- Mean of means : 6.49
- Mean of std : 2.06



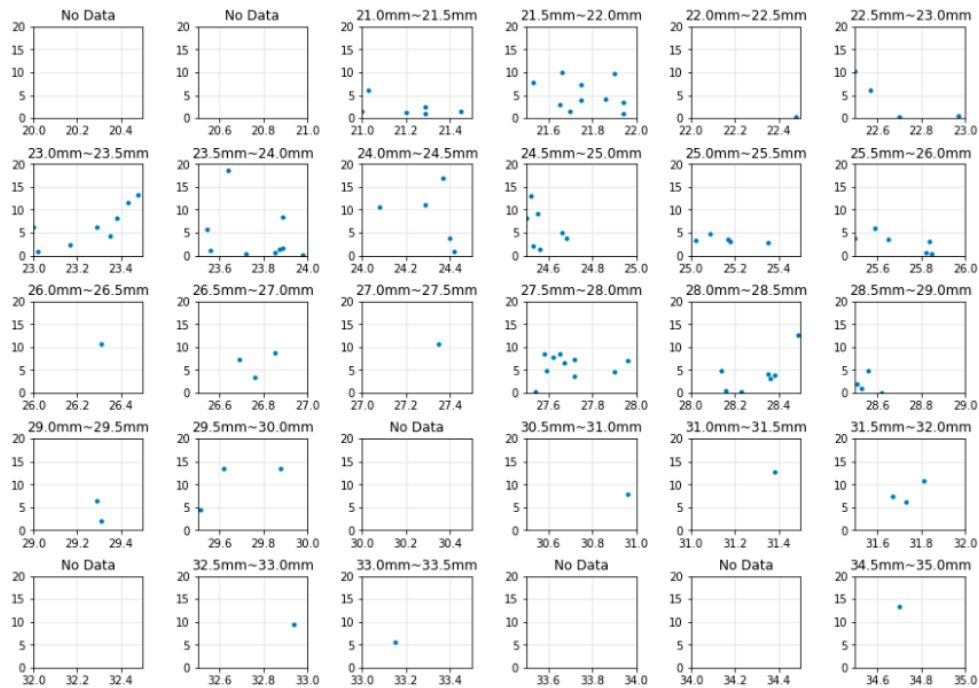
### Mean of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 2.2847738,
'21.5mm~22.0mm': 5.177789,
'22.0mm~22.5mm': 0.35067558,
'22.5mm~23.0mm': 4.288497,
'23.0mm~23.5mm': 6.5750675,
'23.5mm~24.0mm': 4.211028,
'24.0mm~24.5mm': 8.663546,
'24.5mm~25.0mm': 6.097474,
'25.0mm~25.5mm': 3.5171413,
'25.5mm~26.0mm': 2.899994,
'26.0mm~26.5mm': 10.713873,
'26.5mm~27.0mm': 6.480922,
'27.0mm~27.5mm': 10.7521305,
'27.5mm~28.0mm': 5.8631806,
'28.0mm~28.5mm': 4.1780367,
'28.5mm~29.0mm': 1.9046721,
'29.0mm~29.5mm': 4.237706,
'29.5mm~30.0mm': 10.444178,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 7.950718,
'31.0mm~31.5mm': 12.686533,
'31.5mm~32.0mm': 8.123104,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 9.480181,
'33.0mm~33.5mm': 5.5915146,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 13.365917
```

### Std of each region

```
'20.0mm~20.5mm': nan,
'20.5mm~21.0mm': nan,
'21.0mm~21.5mm': 1.742829,
'21.5mm~22.0mm': 3.0955431,
'22.0mm~22.5mm': 0.0,
'22.5mm~23.0mm': 4.135111,
'23.0mm~23.5mm': 3.9745553,
'23.5mm~24.0mm': 5.7454267,
'24.0mm~24.5mm': 5.677471,
'24.5mm~25.0mm': 3.8704834,
'25.0mm~25.5mm': 0.70229495,
'25.5mm~26.0mm': 1.9389099,
'26.0mm~26.5mm': 0.0,
'26.5mm~27.0mm': 2.2098951,
'27.0mm~27.5mm': 0.0,
'27.5mm~28.0mm': 2.4424472,
'28.0mm~28.5mm': 3.7756534,
'28.5mm~29.0mm': 1.7975597,
'29.0mm~29.5mm': 2.1748266,
'29.5mm~30.0mm': 4.1827183,
'30.0mm~30.5mm': nan,
'30.5mm~31.0mm': 0.0,
'31.0mm~31.5mm': 0.0,
'31.5mm~32.0mm': 2.0139532,
'32.0mm~32.5mm': nan,
'32.5mm~33.0mm': 0.0,
'33.0mm~33.5mm': 0.0,
'33.5mm~34.0mm': nan,
'34.0mm~34.5mm': nan,
'34.5mm~35.0mm': 0.0
```

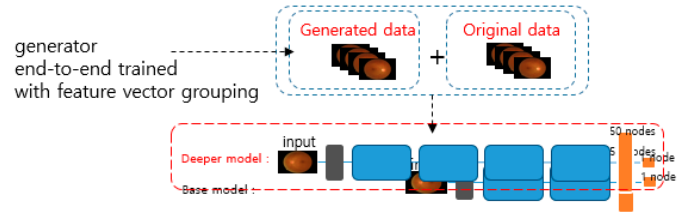
### Scatter plots





**Figure S12.** MAE values and scatter plots for all regions from deeper model trained with original images and generated images by end-to-end trained generator with feature vector grouping.

- Mean of means : 4.38
- Mean of std : 0.97



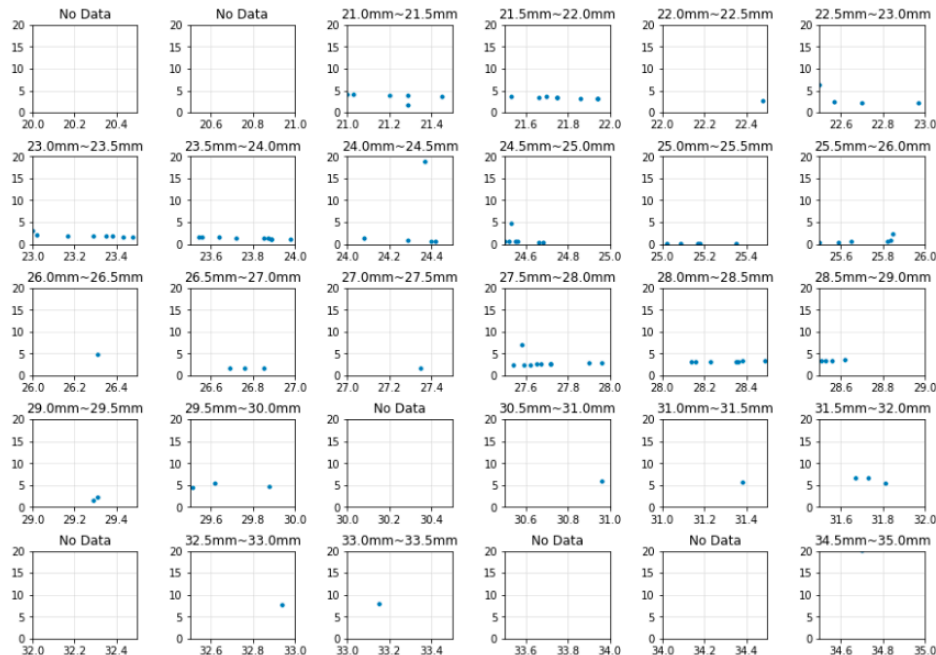
### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 3.5295317,  
 '21.5mm~22.0mm': 7.218952,  
 '22.0mm~22.5mm': 2.6166096,  
 '22.5mm~23.0mm': 3.304319,  
 '23.0mm~23.5mm': 1.9584224,  
 '23.5mm~24.0mm': 1.331462,  
 '24.0mm~24.5mm': 4.477878,  
 '24.5mm~25.0mm': 1.1288412,  
 '25.0mm~25.5mm': 0.09025459,  
 '25.5mm~26.0mm': 0.8775215,  
 '26.0mm~26.5mm': 4.818714,  
 '26.5mm~27.0mm': 1.6700579,  
 '27.0mm~27.5mm': 1.7762928,  
 '27.5mm~28.0mm': 3.0357625,  
 '28.0mm~28.5mm': 3.206713,  
 '28.5mm~29.0mm': 3.4553547,  
 '29.0mm~29.5mm': 1.9477367,  
 '29.5mm~30.0mm': 4.9085135,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 5.86339,  
 '31.0mm~31.5mm': 5.633692,  
 '31.5mm~32.0mm': 6.2375298,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 7.8433895,  
 '33.0mm~33.5mm': 8.074989,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 20.17508

### Std of each region

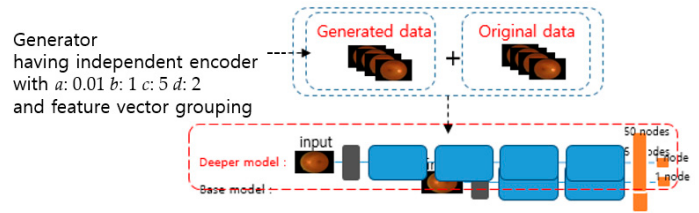
'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 0.8486615,  
 '21.5mm~22.0mm': 7.7506337,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 1.8023148,  
 '23.0mm~23.5mm': 0.45350906,  
 '23.5mm~24.0mm': 0.15633027,  
 '24.0mm~24.5mm': 7.1928167,  
 '24.5mm~25.0mm': 1.4892005,  
 '25.0mm~25.5mm': 0.061500136,  
 '25.5mm~26.0mm': 0.67268986,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 0.06548955,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 1.3367077,  
 '28.0mm~28.5mm': 0.1202038,  
 '28.5mm~29.0mm': 0.045010988,  
 '29.0mm~29.5mm': 0.29768372,  
 '29.5mm~30.0mm': 0.4652802,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 0.5179876,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

### Scatter plots



**Figure S13.** MAE values and scatter plots for all regions from deeper model trained with original images and generated images by generator having independent encoder with  $a$ : 0.01  $b$ : 1  $c$ : 5  $d$ : 2, and feature vector grouping.

- Mean of means : 4.33
- Mean of std : 0.25



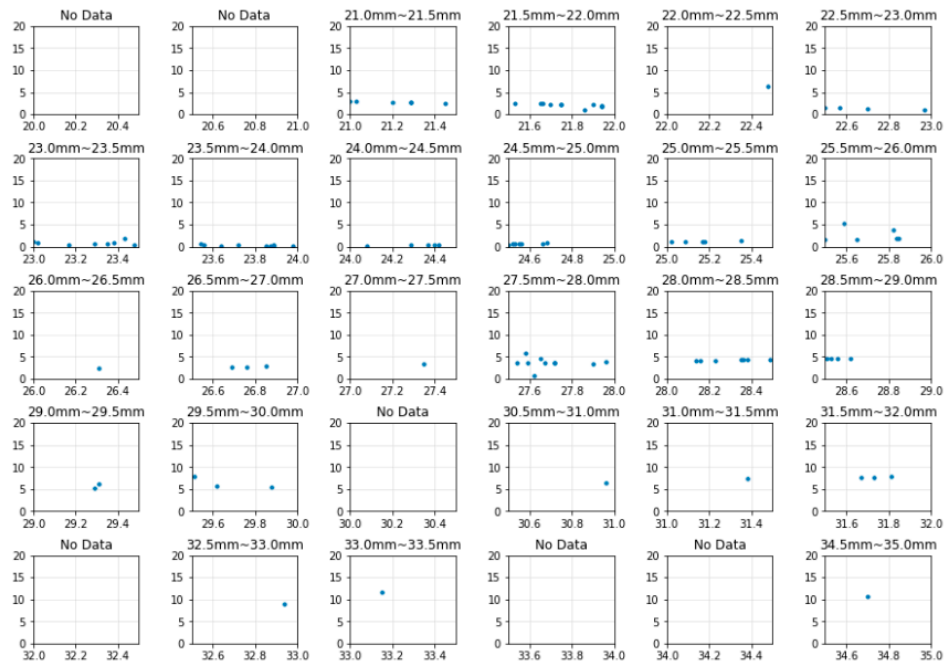
### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 2.7848923,  
 '21.5mm~22.0mm': 2.0789924,  
 '22.0mm~22.5mm': 6.3128624,  
 '22.5mm~23.0mm': 1.3112063,  
 '23.0mm~23.5mm': 0.84992146,  
 '23.5mm~24.0mm': 0.21467802,  
 '24.0mm~24.5mm': 0.31109542,  
 '24.5mm~25.0mm': 0.58353966,  
 '25.0mm~25.5mm': 1.1656086,  
 '25.5mm~26.0mm': 2.6256192,  
 '26.0mm~26.5mm': 2.3068275,  
 '26.5mm~27.0mm': 2.771569,  
 '27.0mm~27.5mm': 3.3549023,  
 '27.5mm~28.0mm': 3.6526096,  
 '28.0mm~28.5mm': 4.305039,  
 '28.5mm~29.0mm': 4.6157975,  
 '29.0mm~29.5mm': 5.7190294,  
 '29.5mm~30.0mm': 6.30595,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 6.4011345,  
 '31.0mm~31.5mm': 7.384901,  
 '31.5mm~32.0mm': 7.741464,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 8.9449005,  
 '33.0mm~33.5mm': 11.54808,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 10.704903

### Std of each region

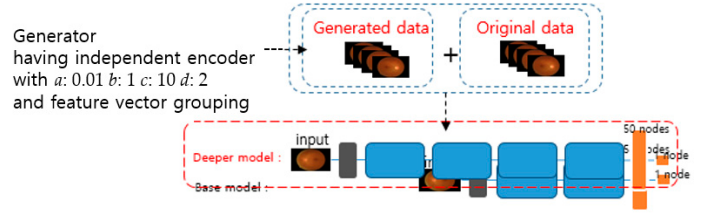
'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 0.15555999,  
 '21.5mm~22.0mm': 0.41811982,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 0.1794781,  
 '23.0mm~23.5mm': 0.46412596,  
 '23.5mm~24.0mm': 0.16148698,  
 '24.0mm~24.5mm': 0.12635002,  
 '24.5mm~25.0mm': 0.09327123,  
 '25.0mm~25.5mm': 0.11141412,  
 '25.5mm~26.0mm': 1.354104,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 0.06548955,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 1.2107234,  
 '28.0mm~28.5mm': 0.114021555,  
 '28.5mm~29.0mm': 0.058897365,  
 '29.0mm~29.5mm': 0.42413044,  
 '29.5mm~30.0mm': 1.1190597,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 0.057218406,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

### Scatter plots



**Figure S14.** MAE values and scatter plots for all regions from deeper model trained with original images and generated images by generator having independent encoder with  $a: 0.01$   $b: 1$   $c: 10$   $d: 2$ , and feature vector grouping.

- Mean of means : 4.08
- Mean of std : 0.12



### Mean of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 2.5798528,  
 '21.5mm~22.0mm': 1.9556284,  
 '22.0mm~22.5mm': 1.3118649,  
 '22.5mm~23.0mm': 1.1016436,  
 '23.0mm~23.5mm': 0.49882817,  
 '23.5mm~24.0mm': 0.12065739,  
 '24.0mm~24.5mm': 0.7311989,  
 '24.5mm~25.0mm': 0.78238076,  
 '25.0mm~25.5mm': 1.3882275,  
 '25.5mm~26.0mm': 1.9520003,  
 '26.0mm~26.5mm': 2.582325,  
 '26.5mm~27.0mm': 2.9748046,  
 '27.0mm~27.5mm': 3.558138,  
 '27.5mm~28.0mm': 3.963906,  
 '28.0mm~28.5mm': 4.5787997,  
 '28.5mm~29.0mm': 4.602494,  
 '29.0mm~29.5mm': 5.565778,  
 '29.5mm~30.0mm': 5.933334,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 7.1681385,  
 '31.0mm~31.5mm': 7.5881367,  
 '31.5mm~32.0mm': 7.9466805,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 9.1479435,  
 '33.0mm~33.5mm': 9.400005,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 10.513502

### Std of each region

'20.0mm~20.5mm': nan,  
 '20.5mm~21.0mm': nan,  
 '21.0mm~21.5mm': 0.15679394,  
 '21.5mm~22.0mm': 0.25806817,  
 '22.0mm~22.5mm': 0.0,  
 '22.5mm~23.0mm': 0.18017551,  
 '23.0mm~23.5mm': 0.21170115,  
 '23.5mm~24.0mm': 0.057893574,  
 '24.0mm~24.5mm': 0.46185023,  
 '24.5mm~25.0mm': 0.06253447,  
 '25.0mm~25.5mm': 0.1168058,  
 '25.5mm~26.0mm': 0.14634845,  
 '26.0mm~26.5mm': 0.0,  
 '26.5mm~27.0mm': 0.06548955,  
 '27.0mm~27.5mm': 0.0,  
 '27.5mm~28.0mm': 0.26158643,  
 '28.0mm~28.5mm': 0.25624675,  
 '28.5mm~29.0mm': 0.30594325,  
 '29.0mm~29.5mm': 0.0674181,  
 '29.5mm~30.0mm': 0.11134576,  
 '30.0mm~30.5mm': nan,  
 '30.5mm~31.0mm': 0.0,  
 '31.0mm~31.5mm': 0.0,  
 '31.5mm~32.0mm': 0.058382083,  
 '32.0mm~32.5mm': nan,  
 '32.5mm~33.0mm': 0.0,  
 '33.0mm~33.5mm': 0.0,  
 '33.5mm~34.0mm': nan,  
 '34.0mm~34.5mm': nan,  
 '34.5mm~35.0mm': 0.0

### Scatter plots

