Experiment ID	Date	Dataset / Classes	Number of Classes	Model Version	Img Size	Key Hyperparameter changes	Train Acc	Val Acc	Val F1	Notes
exp0	2025-10-14	Fitzpatrick17k	104	ResNet-50	224×224	• Optimizer: Adam, LR: 1e-3 • Batch size: 16 • No augmentation • Head: MLP[512, 256], dropout 0.5 • No BatchNorm • Weighted sampling on	15 %	10 %	—	• Initial pipeline check run • Clear underfit indicating possible issues with architecture
exp1	2025-10-14	Fitzpatrick17k	24	DenseNet-121 (ImageNet)	224×224	• Optimizer: AdamW • Batch size: 32 • Light data augmentation, such as jitter/flips • Added BatchNorm	~45 %	~30 %	0.25	• Data Augmentation definitely important • BatchNorm also important for performance • Reducing classes for now to test architectures, models may find it hard to predict 114 classes
exp2	2025-10-15	Fitzpatrick17k	24	ResNet-101	224×224	• Separated optimizer for head classifier and backbone pretrained model • Head [1024, 256], Dropout 0.3 to make classifier stronger	90.0 %	63.1 %	0.54	• Strong baseline • overfit after ~ep9 • Beneficial to have separate optimizers
exp3	2025-10-15	- Fitzpatrick17k - DDI - ISIC	26	ResNet-101	224×224	• Head [1024,512] • Drop 0.4 (to prevent overfit) • Jitter/hue 0.2, Rot 20°, Flip 0.5 (Stronger augmentations to prevent overfit)	80.3 %	65.6 %	0.575	• More data stronger aug
exp4	2025-10-16	Fitzpatrick17k	40	ResNet-101	224×224	• Batch size 96 • Head [2048,1024,512] • Drop 0.5 • Label smooth 0.1	62.9 %	≈60 %	—	• Larger batch + heavier head • Label smoothing for better classification accounting for class imbalance
exp5	2025-10-15	- Fitzpatrick17k - DDI - ISIC	66	ResNet-101	348×348	• Added warmup of 10 epochs where backbone is not trained but head is trained • Decreased Optimizer LR: 7e-4 / 7e-5 • Increased resolution, may be useful for dermatology tasks	95.1 %	64.75 %	0.525	• Highest Validation f1 score • Increased resolution seems useful
exp6	2025-10-15→16	- Fitzpatrick17k - DDI - ISIC	66	ResNet-101	348×348	• Added Cosine annealing	92.6 %	64.05	0.485	• Similar results, train loss a bit higher
exp7	2025-10-16	- Fitzpatrick17k - DDI - ISIC	104	ResNet-101	448×448	• Batch size back to 64 (memory issues) • Reduce Warmup to 5 ep • Increase res further	97.97 %	64.72 %	0.487	• This architecture seems to work with more labels as well, which is great • Increased res doesnt seem to help
exp8	2025-10-16	- Fitzpatrick17k - DDI - ISIC	104	ResNet-101	448×448	• Head [512], Drop 0.5 (to prevent overfit) • Label smooth 0.15 • Batch 64 • Stronger Aug: Jitter/Contrast/Sat 0.25, Rot 25°, Scale [0.8,1.1], Flips	97 %	63 %	0.48	• Classifier overfits despite weak head
exp9	2025-10-16	- Fitzpatrick17k - DDI - ISIC	104	ResNet-101	384×384	• Added Focal loss instead of cross entropy with equal class weightage	47.5 %	43.6 %	0.097	• Poorer performance in comparison to cross entropy

exp10	2025-10-16	- Fitzpatrick17k - DDI - ISIC	104	ResNet-101	384×384	• Focal class with weights inverse proportional to class frequency	92.3 %	64.4 %	0.45	• Does not help. Revert to cross entropy, maybe do further analysis with focal loss later since studies do show this is supposed to help
exp11	2025-10-16	- Fitzpatrick17k - DDI - ISIC	114	ResNet-101	384×384	• Reverted CrossEntropy • Adding pooling before classifier • More data classes	95.5 %	65.0 %	0.46	• F1 drops (expected, as we introduce several rare classes), but otherwise performance remains similar, quicker convergence
exp12	2025-10-16	- Fitzpatrick17k - DDI - ISIC	114	ResNet-101	384×384	• We unfreeze only the last 20 layers of the pretrained model instead of unfreezing all	97.3 %	65.6 %	0.48	• Partial unfreeze improved regularization and F1
exp13	2025-10-16	- Fitzpatrick17k - DDI - ISIC	114	EfficientNet-B0	384×384	• Same config as Run 12 but EffNet-B0 backbone	79.9 %	61.4 %	0.35	Test of EffNet family; lower capacity vs ResNet-101; next try B2/B4 for higher res.
exp14	2025-10-16	- Fitzpatrick17k - DDI - ISIC	114	EfficientNet-B4	384×384	• Same config as Run 12 but EffNet-B4 backbone	75%	60.4 %	0.4	Resnet seems to be better