SOFTWARE

Educational Training Guide

NMI ParaVision 360 – PET Reconstruction Selections

PET Reconstruction Selection Guide

Choose a reconstruction in two steps: count level, then target size.

1 Classify counts

2 Choose target size

3 Apply settings

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How to use this guide

STEP 1 Count level	→	STEP 2 Target size	→	RESULT Reconstruction recipe
• Use the sample total-count category used by your site or protocol.		• Use >3 mm for whole organs, tumors, or other larger structures.		• Set algorithm, iterations, voxel size, PSF/PVC, and MAP.
• Counts are influenced mainly by injected activity and scan duration.		• Use <3 mm for brain subregions, myocardium, joints, and other fine structures.		• Expect small-object and low-count selections to take longer.

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Quick selector: start here

HIGH COUNTS	MEDIUM COUNTS	LOW COUNTS
Target >3 mm	**Target >3 mm**	**Target >3 mm**
2D/3D OSEM, 1 iteration 0.5 or 0.75 mm | PSF/PVC Off | MAP Off	Preferred fast default: 2D/3D OSEM, 1 iteration 0.5 or 0.75 mm | PSF/PVC Off | MAP Off	3D MLEM, 18 iterations 0.5 or 0.75 mm | PSF/PVC Off | MAP Off
Target <3 mm	**Target <3 mm**	**Target <3 mm**
3D OSEM, 1 iteration 0.25 mm | PSF/PVC On | MAP On	3D MLEM, 18 iterations 0.25 mm | PSF/PVC On | MAP On	3D MLEM, 18 iterations 0.25 mm | PSF/PVC On | MAP On

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Complete setting reference

Counts	Target	Algorithm	Iterations	Voxel (mm)	PSF/PVC	MAP	Relative time
High	>3 mm	2D/3D OSEM	1	0.5 / 0.75	Off	Off	Fast
High	<3 mm	3D OSEM	1	0.25	On	On	Fast
Medium	>3 mm	2D/3D OSEM	1	0.5 / 0.75	Off	Off	Fast
Medium	>3 mm	2D/3D MLEM	18	0.5 / 0.75	Off	Off	Intermediate
Medium	<3 mm	3D MLEM	18	0.25	On	On	Intermediate
Low	>3 mm	3D MLEM	18	0.5 / 0.75	Off	Off	Long
Low	<3 mm	3D MLEM	18	0.25	On	On	Longest

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Quick selector: start here

FAST	INTERMEDIATE	LONG
• OSEM, 1 iteration	• MLEM, 18 iterations	• MLEM, 18 iterations
• Best fit for high counts or larger targets	• Common for medium-count small targets	• Required for low-count data
• Use the coarser voxel when fine detail is not required	• May also be used for medium-count larger targets	• 0.25 mm + PSF/PVC + MAP is the longest combination

Practical rule: use the fastest recipe that still resolves the biological structure required for analysis.

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Example 1: high counts, target <3 mm

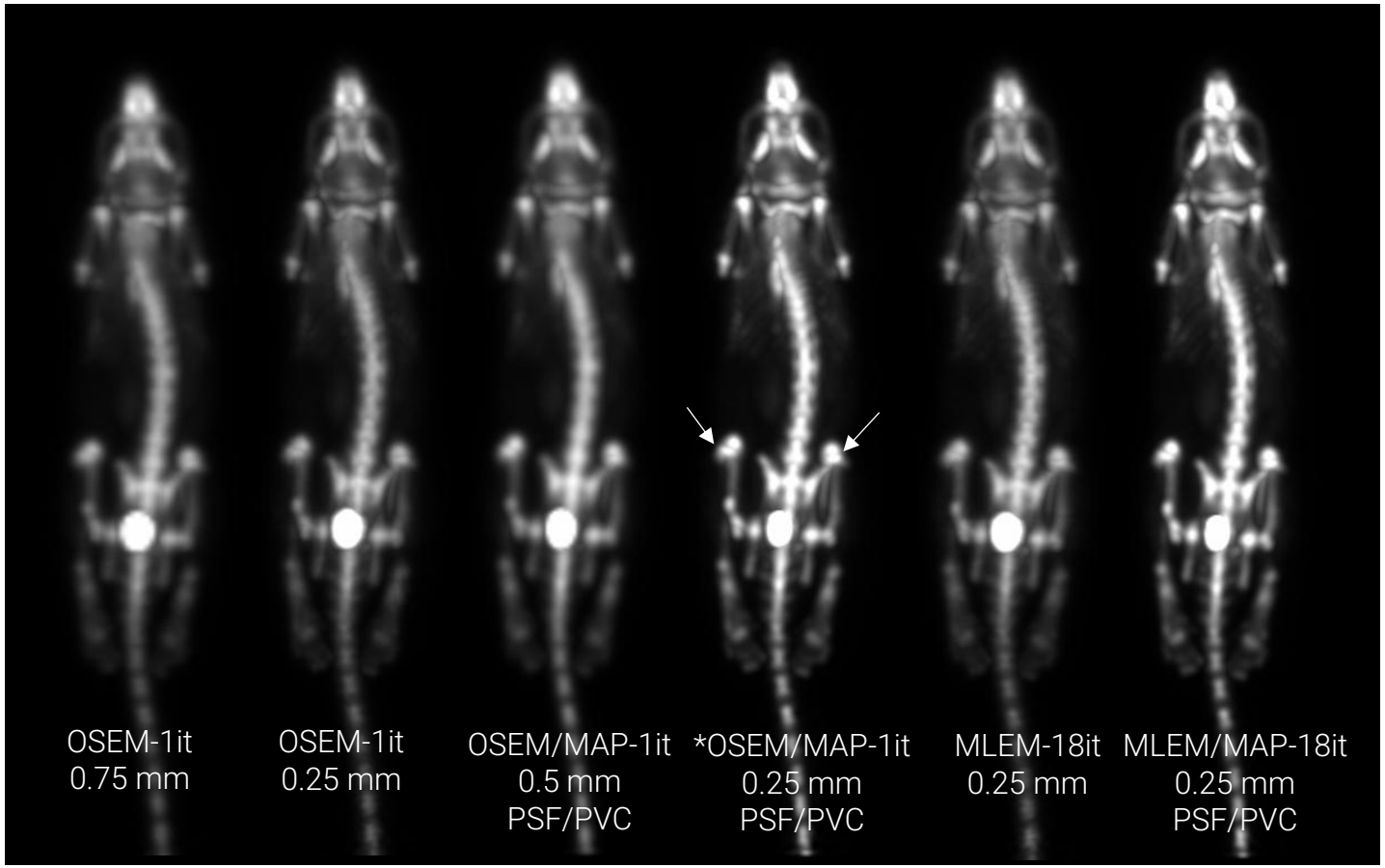
Na-18F mouse | fine skeletal features

Recommended recipe

3D OSEM | 1 iteration
0.25 mm | PSF/PVC On | MAP On

Why this choice

Preserves small-feature contrast while reconstructing substantially faster than the MLEM/MAP option.



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Example 2: low counts, target <3 mm

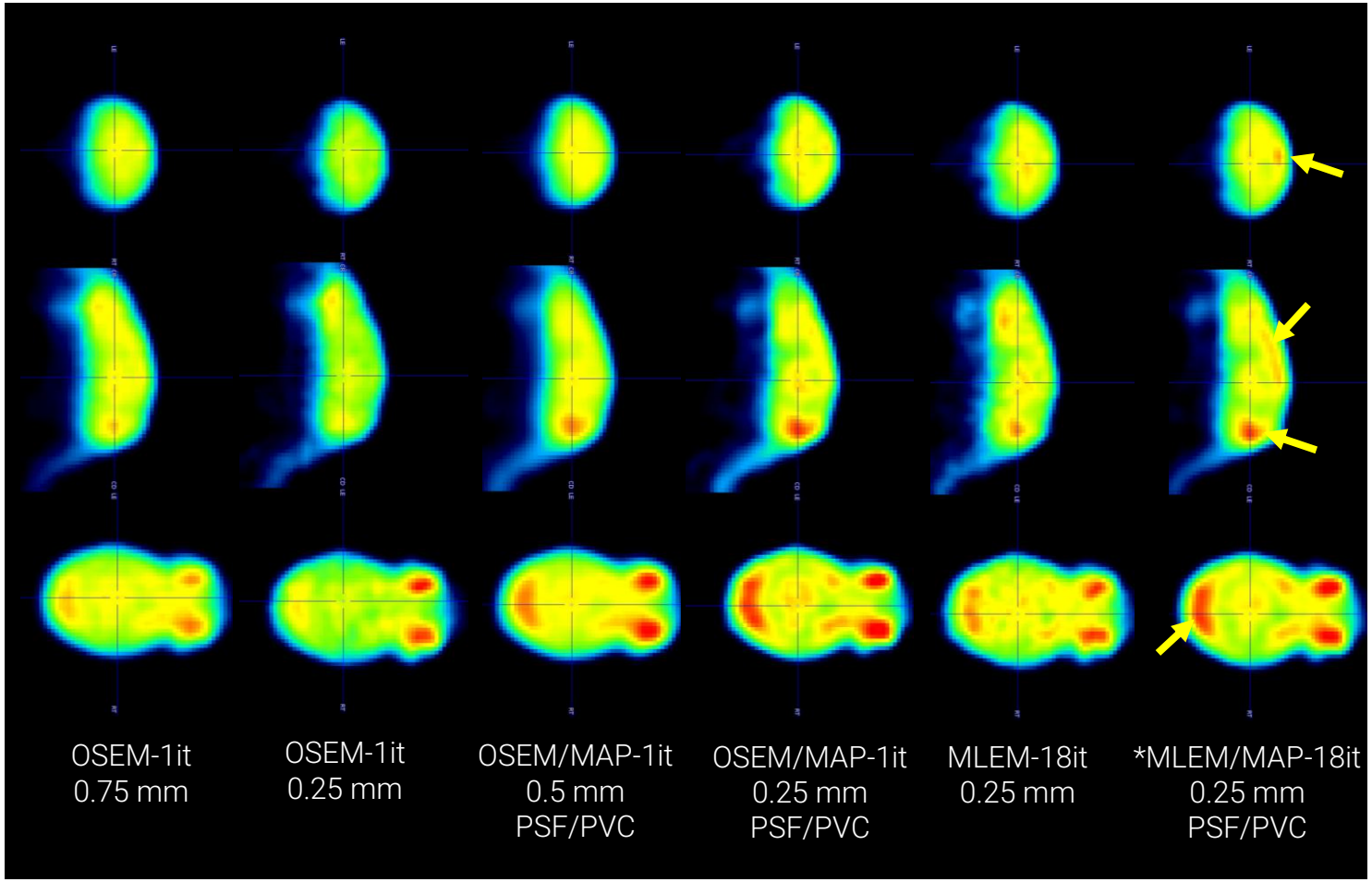
18F-FDG mouse brain | cortex and subregions

Recommended recipe

3D MLEM | 18 iterations
0.25 mm | PSF/PVC On | MAP On

Why this choice

The longest recipe, but needed here to recover the finest brain detail from low-count data.



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Example 3: medium counts, target >3 mm

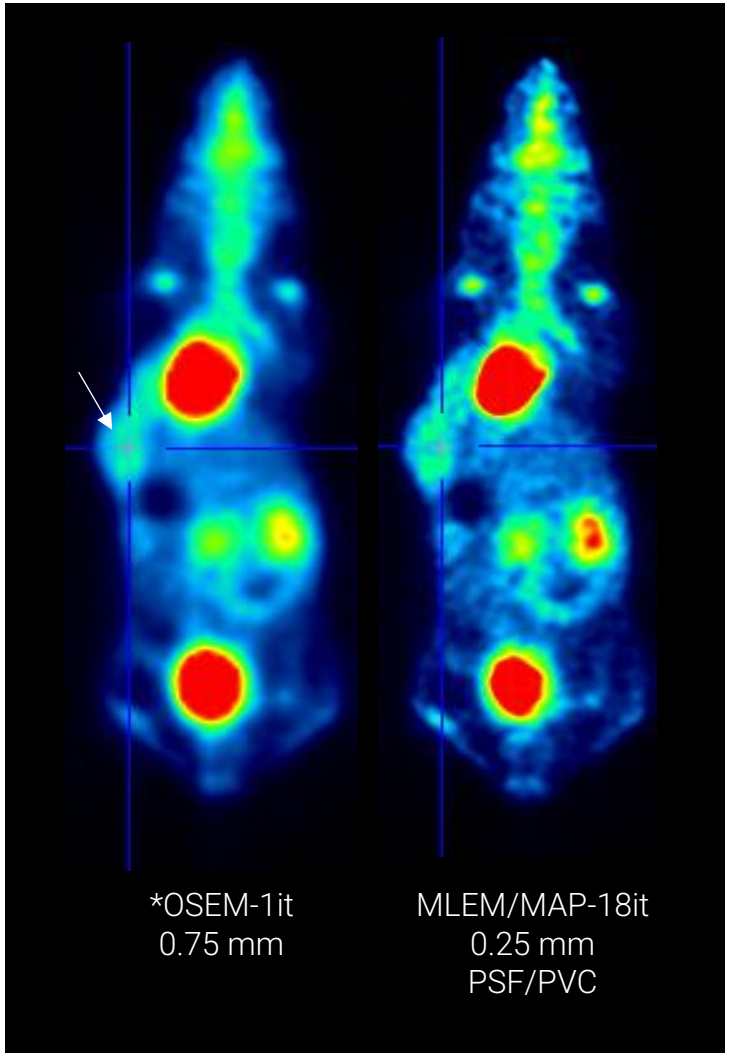
18F-FDG xenograft | homogeneous tumor >3 mm

Recommended recipe

2D/3D OSEM | 1 iteration
0.75 mm | PSF/PVC Off | MAP Off

Why this choice

Provides adequate tumor contrast and detail with the fastest reconstruction time.



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