Supplementary Material:
Source-Free Domain Adaptation of Weakly-Supervised Object Localization Models for Histology

Alexis Guichemerre[1*], Soufiane Belharbi[1], Tsiry Mayet[2], Shakeeb Murtaza[1],
Pourya Shamsolmoali[3], Luke McCaffrey[4], Eric Granger[1†]
[1] LIVIA, Dept. of Systems Engineering, ETS Montreal, Canada
[2] LITIS UR 4108, F-746000, INSA Rouen Normandie, France
[3] School of Electronics, Electrical Engineering and Computer Science, Queen's University Belfast, UK
[4] Goodman Cancer Research Centre, Dept. of Oncology, McGill University, Montreal, Canada

This supplementary material encompasses the following sections:

- Explanation of the hyperparameters use for source models and target models obtained after adaptation.
- A example of several images to illustrate the localization performance obtained with SFDA methods.

1. Hyperparameters for the source and target models

Table 1. General hyper-parameters.

Hyper-parameter	Value
Fully sup. model f	U-Net
Backbones	ResNet50.
Optimizer	SGD
Nesterov acceleration	True
Momentum	$\in \{0.1, 0.4, 0.9\}$ for source models $\{0.4, 0.9\}$ for target models
Weight decay	0.0001
Learning rate	$\in \{0.0001, 0.001, 0.002, 0.01, 0.02, 0.1\}$ for source $\{0.0001, 0.001, 0.01\}$ for target
Learning rate decay	`GlaS`: $0.1 \in \{150, 250, 350e\}$ epochs for source and 250 for target `CAMELYON16`: $0.1 \in \{2, 5, 8\}$ epochs for source and 5 for target
Mini-batch size	32
Random flip	Horizontal/vertical random flip
Random color jittering	Brightness, contrast, and saturation at 0.5 and hue at 0.05
Image size	Resize image to 225×225. Then, crop random patches of 224×224
Learning epochs	`GlaS`: 1000, `CAMELYON16`: 20

Table 2. (WSOL) hyper-parameters.

Hyper-parameter	Value
Deep MIL	Mid-channels = 128. Gated attention: True/False.

2. Samples Localization Generated by our Models

Table 3. Per-method hyper-parameters for SFDA methods.

Hyper-parameter	Value
SHOT	$\lambda_{ent} \in \{0.3, 0.6, 1.0\}$ $\lambda_{div} \in \{0.3, 0.6, 1.0\}$ $\lambda_{pseu} \in \{0.1\}$
CDCL	$\tau \in \{0.04, 0.08\}$ $\lambda_{cdcl} \in \{0.001, 0.005, 0.01, 0.05, 0.1, 1.0\}$
SFDE	$\tau \in \{0.8, 1.0\}$ $\lambda_{sfde} \in \{0.001, 0.01, 0.05, 0.1, , 0.5, 1.0\}$
AdaDSA	$\lambda_{ent} \in \{0.03, 0.6, 1.0\}$ $\lambda_{ce} \in \{0.03, 0.6, 1.0\}$ $\lambda_{cd,smooth} \in \{0.01, 0.1\}$ $\alpha \in \{5, 10\}$

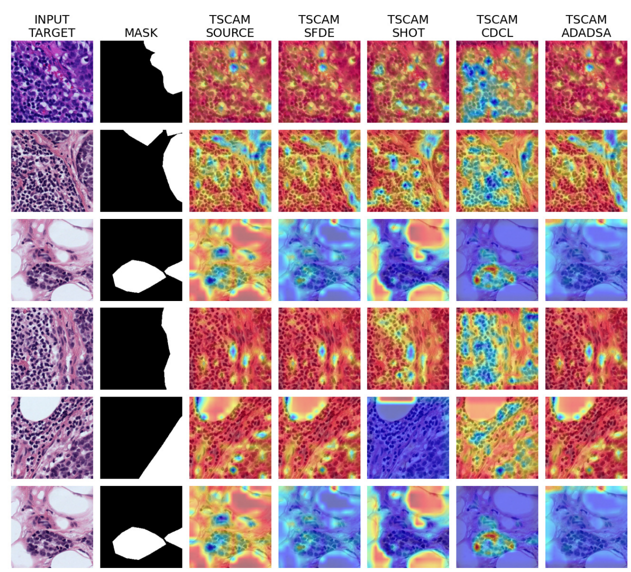

Figure 1. TSCAM best classification on CAMELYON512 without source's best classification.

*alexis.guichemerre.1@ens.etsmtl.ca
†eric.granger@etsmtl.ca

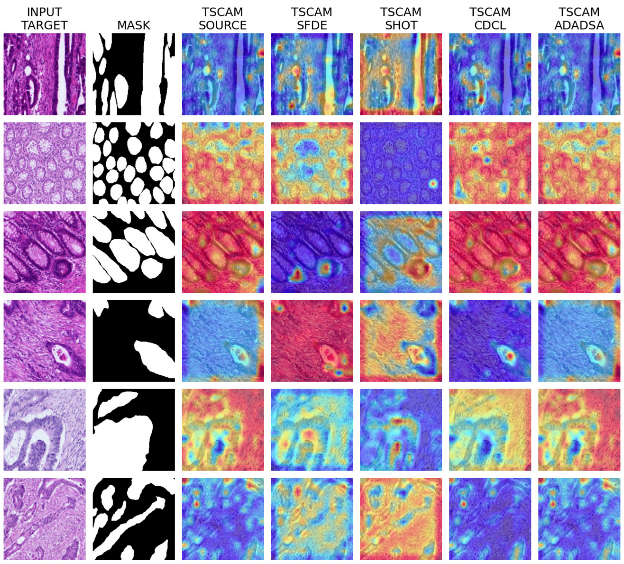

Figure 2. TSCAM best classification on GLAS with source's best classification.

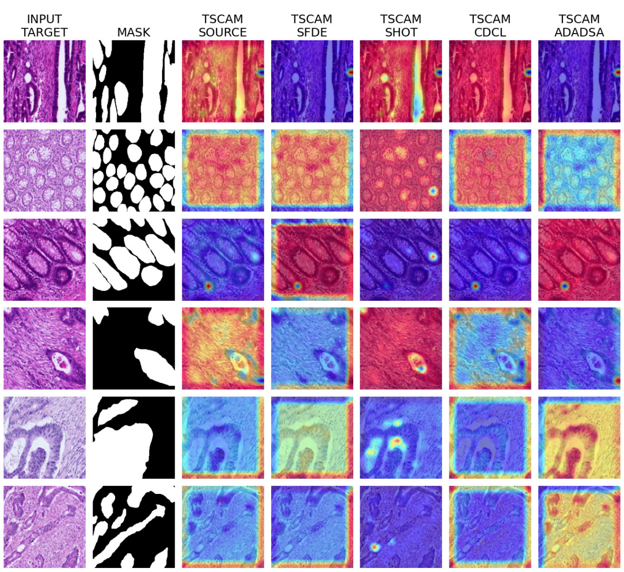

Figure 3. TSCAM best classification on GLAS without source's best classification.

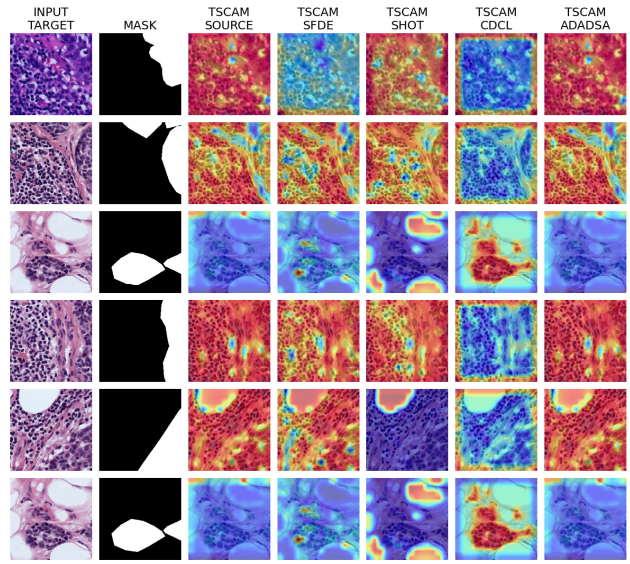

Figure 4. TSCAM best localization on CAMELYON512 without source's best classification.

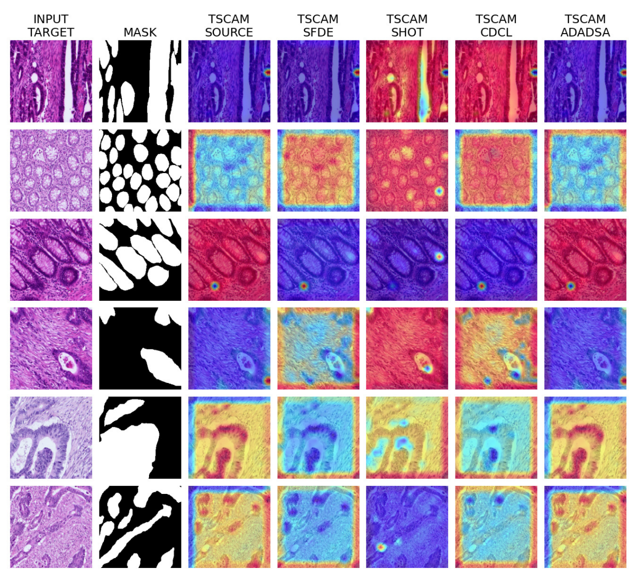

Figure 5. TSCAM best localization on GLAS without source's best classification.

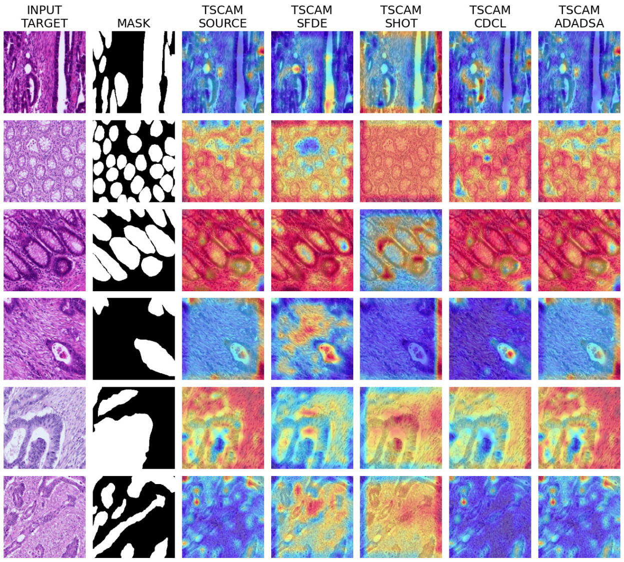

Figure 6. TSCAM best localization on GLAS with source's best classification.

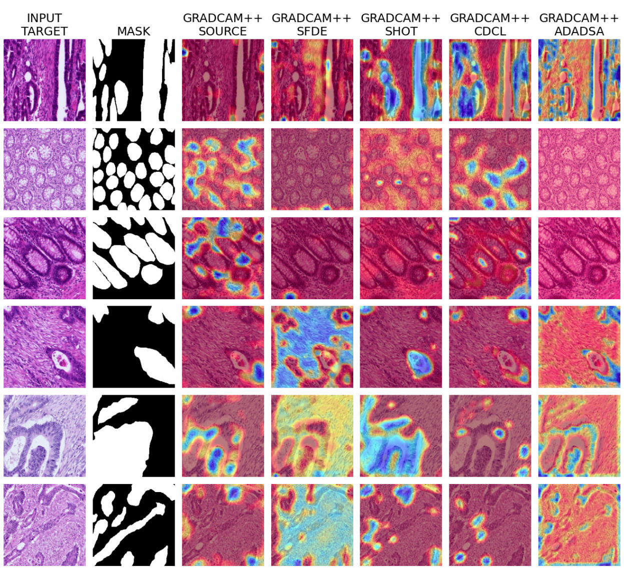

Figure 7. GradCAM++ best classification on GLAS without source's best classification.

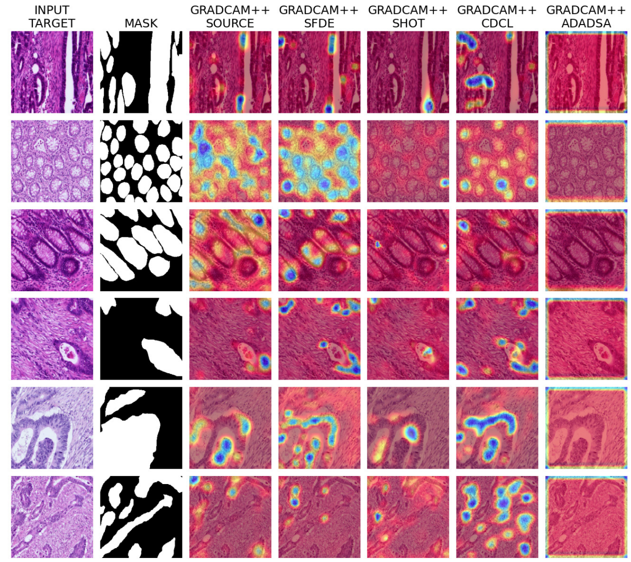

Figure 8. GradCAM++ best classification on GLAS with source's best classification.

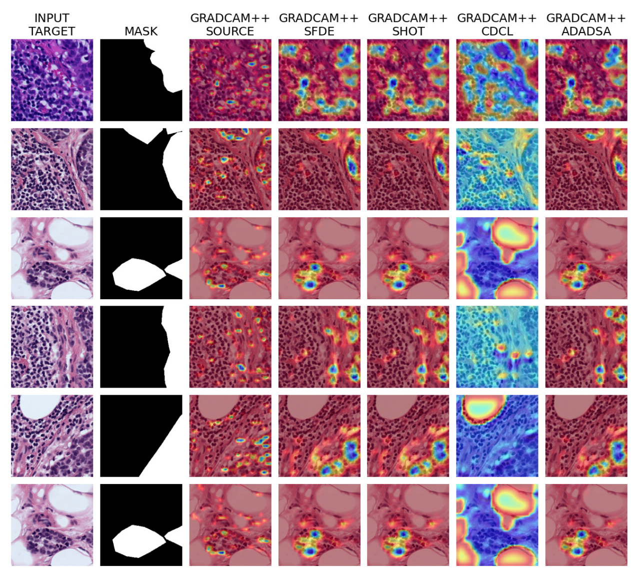

Figure 9. GradCAM++ best classification on CAMELYON512 without source's best classification.

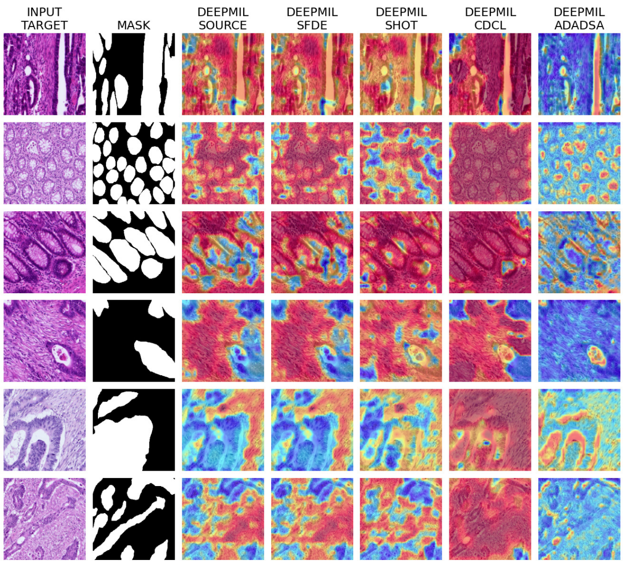

Figure 10. DEEPMIL best classification on GLAS without source's best classification.

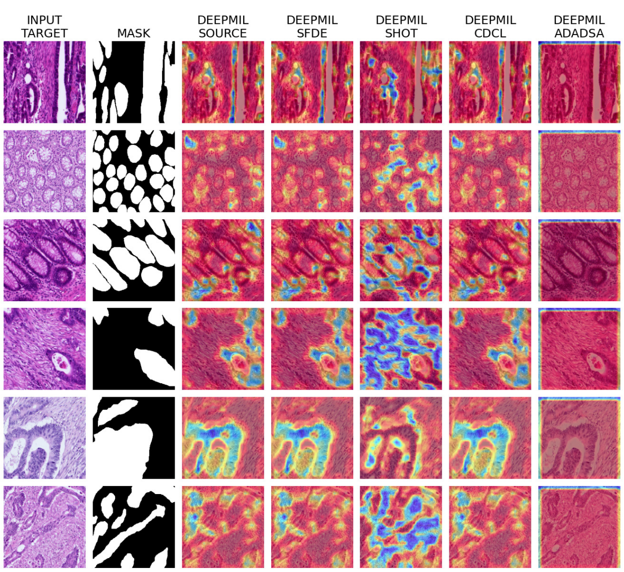

Figure 11. DEEPMIL best classification on GLAS with source's best classification.

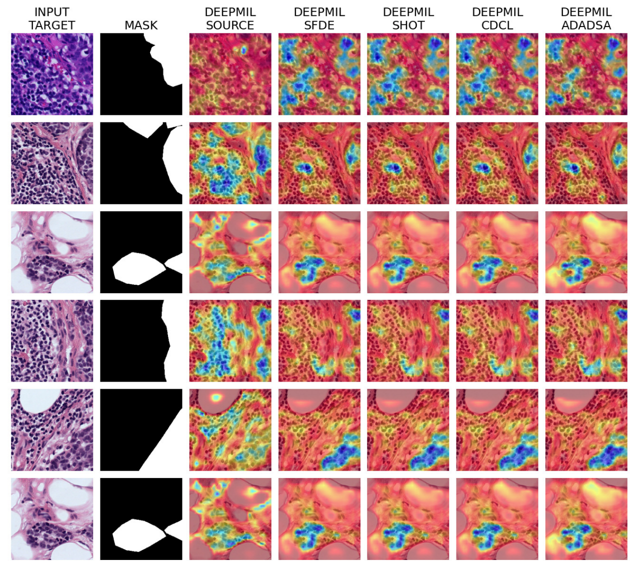

Figure 12. DEEPMIL best classification on CAMELYON512 without source's best classification.

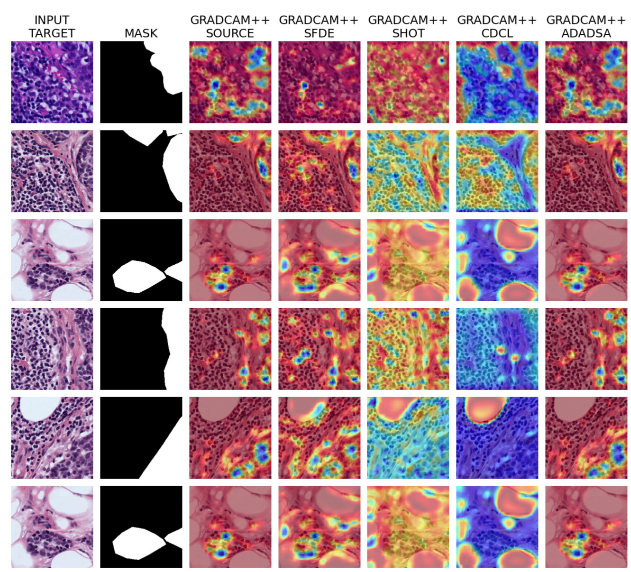

Figure 13. GradCAM++ best localization on CAMELYON512 without source's best classification.

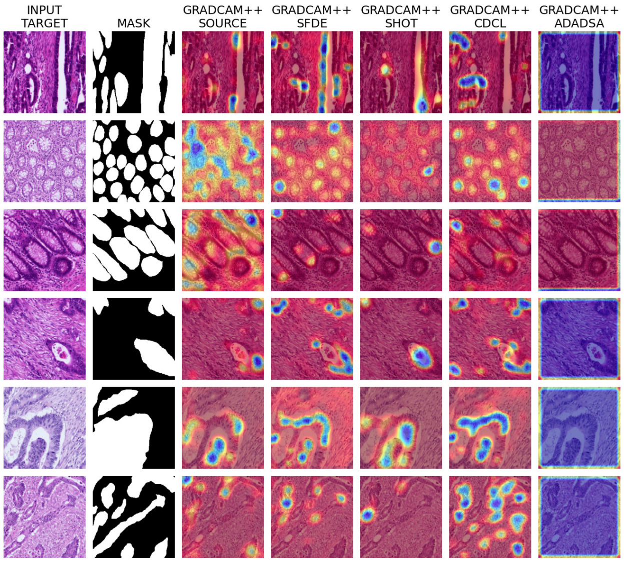

Figure 14. GradCAM++ best localization on GLAS with source's best classification.

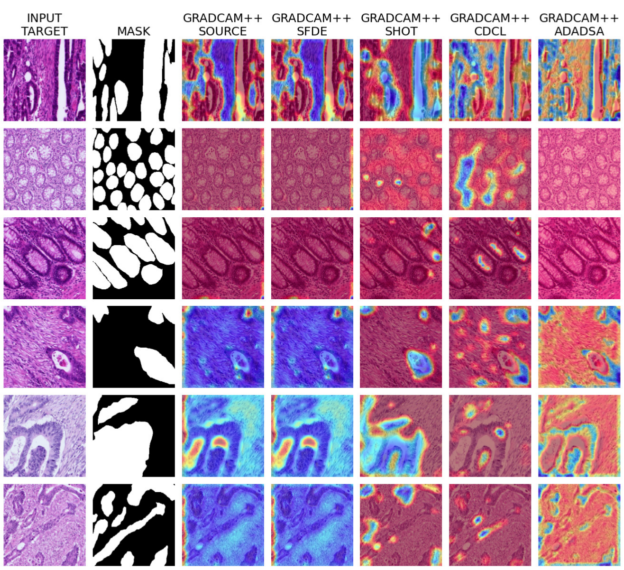

Figure 15. GradCAM++ best localization on GLAS without source's best classification.

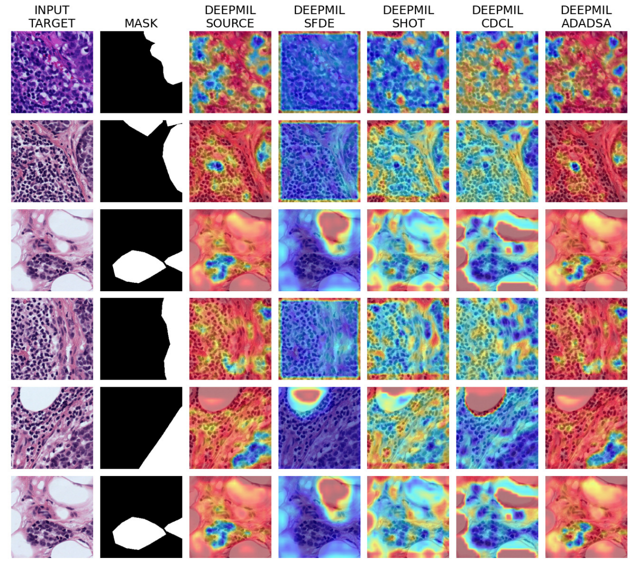

Figure 16. DEEPMIL best localization on CAMELYON512 without source's best classification.

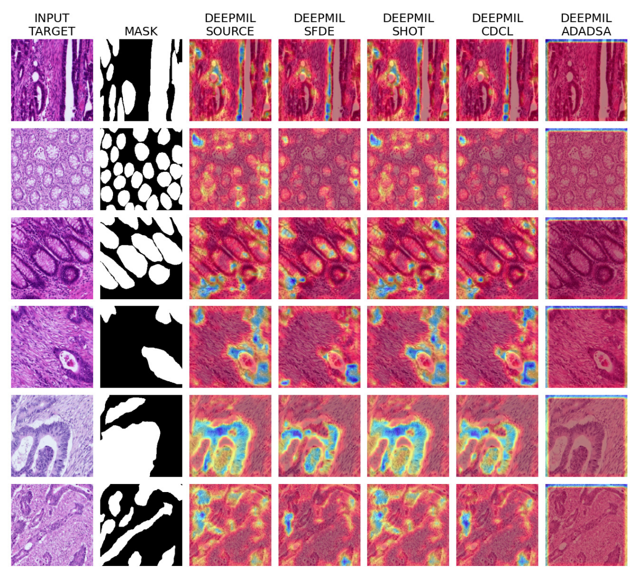

Figure 17. DEEPMIL best localization on GLAS with source's best classification.

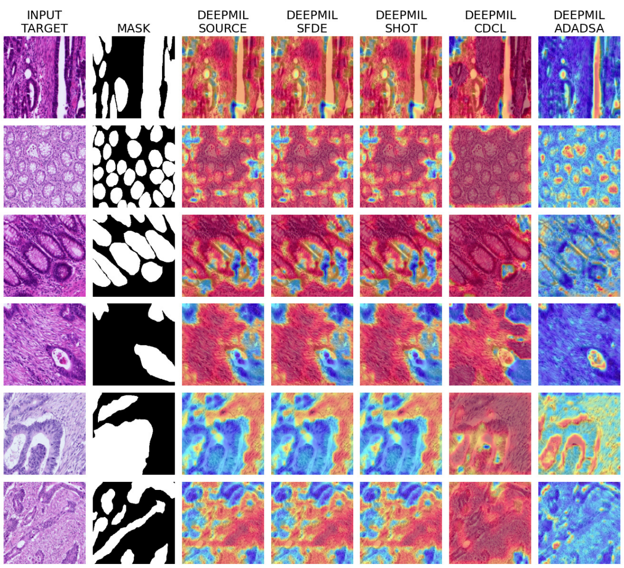

Figure 18. DEEPMIL best localization on GLAS without source's best classification.