

Table S08

*FOCUS 3X Adversarial Trianing (majority vote)*

n slides = 510, n patients = 278

| Model1 / Fold | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|               |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1          | 20       | 12     | 1      | 0      | 7      | 60         | 5      | 0      | 35     | 73            |
| CMS2          | 40       | 2      | 32     | 1      | 5      | 5          | 80     | 3      | 13     |               |
| CMS3          | 13       | 0      | 4      | 9      | 0      | 0          | 31     | 69     | 0      |               |
| CMS4          | 24       | 3      | 1      | 0      | 20     | 13         | 4      | 0      | 83     |               |

| Model2 / Fold | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|               |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1          | 19       | 9      | 1      | 4      | 5      | 47         | 5      | 21     | 26     | 73            |
| CMS2          | 47       | 0      | 41     | 0      | 6      | 0          | 87     | 0      | 13     |               |
| CMS3          | 14       | 0      | 2      | 12     | 0      | 0          | 14     | 86     | 0      |               |
| CMS4          | 27       | 6      | 2      | 0      | 19     | 22         | 7      | 0      | 70     |               |

| Model3 / Fold | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|               |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1          | 19       | 13     | 0      | 0      | 6      | 68         | 0      | 0      | 32     | 70            |
| CMS2          | 46       | 0      | 39     | 2      | 5      | 0          | 85     | 4      | 11     |               |
| CMS3          | 11       | 1      | 3      | 6      | 1      | 9          | 27     | 55     | 9      |               |
| CMS4          | 25       | 0      | 6      | 1      | 18     | 0          | 24     | 4      | 72     |               |

| Model4 / Fold | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|               |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1          | 20       | 9      | 3      | 0      | 8      | 45         | 15     | 0      | 40     | 72            |
| CMS2          | 44       | 2      | 33     | 2      | 7      | 5          | 75     | 5      | 16     |               |
| CMS3          | 11       | 0      | 1      | 10     | 0      | 0          | 9      | 91     | 0      |               |
| CMS4          | 26       | 2      | 2      | 2      | 20     | 8          | 8      | 8      | 77     |               |

| Model5 / Fold | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|               |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1          | 20       | 10     | 4      | 3      | 3      | 50         | 20     | 15     | 15     | 64            |
| CMS2          | 45       | 1      | 34     | 2      | 8      | 2          | 76     | 4      | 18     |               |
| CMS3          | 13       | 0      | 4      | 7      | 2      | 0          | 31     | 54     | 15     |               |
| CMS4          | 26       | 2      | 4      | 0      | 20     | 8          | 15     | 0      | 77     |               |

| Overall | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 98       | 53     | 9      | 7      | 29     | 54         | 9      | 7      | 30     | 70            |
| CMS2    | 222      | 5      | 179    | 7      | 31     | 2          | 81     | 3      | 14     |               |
| CMS3    | 62       | 1      | 14     | 44     | 3      | 2          | 23     | 71     | 5      |               |
| CMS4    | 128      | 13     | 15     | 3      | 97     | 10         | 12     | 2      | 76     |               |

## TCGA 3X - Adversarial Training (majority vote)

n slides = 431, n patients = 430

| Model 1 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 37     | 8      | 21     | 7      | 51         | 11     | 29     | 10     | 63            |
| CMS2    | 189      | 7      | 152    | 17     | 13     | 4          | 80     | 9      | 7      |               |
| CMS3    | 59       | 4      | 10     | 37     | 8      | 7          | 17     | 63     | 14     |               |
| CMS4    | 110      | 11     | 25     | 10     | 64     | 10         | 23     | 9      | 58     |               |

| Model 2 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 43     | 8      | 16     | 6      | 59         | 11     | 22     | 8      | 61            |
| CMS2    | 189      | 4      | 158    | 12     | 15     | 2          | 84     | 6      | 8      |               |
| CMS3    | 59       | 9      | 17     | 26     | 7      | 15         | 29     | 44     | 12     |               |
| CMS4    | 110      | 6      | 32     | 11     | 61     | 5          | 29     | 10     | 55     |               |

| Model 3 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 36     | 9      | 20     | 8      | 49         | 12     | 27     | 11     | 59            |
| CMS2    | 189      | 8      | 149    | 12     | 20     | 4          | 79     | 6      | 11     |               |
| CMS3    | 59       | 4      | 15     | 32     | 8      | 7          | 25     | 54     | 14     |               |
| CMS4    | 110      | 12     | 25     | 13     | 60     | 11         | 23     | 12     | 55     |               |

| Model 4 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 43     | 1      | 24     | 5      | 59         | 1      | 33     | 7      | 60            |
| CMS2    | 189      | 8      | 118    | 49     | 14     | 4          | 62     | 26     | 7      |               |
| CMS3    | 59       | 4      | 4      | 43     | 8      | 7          | 7      | 73     | 14     |               |
| CMS4    | 110      | 19     | 25     | 16     | 50     | 17         | 23     | 15     | 45     |               |

| Model 5 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 43     | 1      | 24     | 5      | 59         | 1      | 33     | 7      | 61            |
| CMS2    | 189      | 8      | 118    | 49     | 14     | 4          | 62     | 26     | 7      |               |
| CMS3    | 59       | 4      | 4      | 43     | 8      | 7          | 7      | 73     | 14     |               |
| CMS4    | 110      | 12     | 29     | 13     | 56     | 11         | 26     | 12     | 51     |               |

| Overall | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 73       | 42     | 5      | 21     | 5      | 58         | 7      | 29     | 7      | 64            |
| CMS2    | 189      | 3      | 154    | 18     | 14     | 2          | 81     | 10     | 7      |               |
| CMS3    | 59       | 5      | 9      | 38     | 7      | 8          | 15     | 64     | 12     |               |
| CMS4    | 110      | 10     | 30     | 11     | 59     | 9          | 27     | 10     | 54     |               |

## GRAMPIAN 12X - Adversarial Training (majority vote)

n slides = 265, n patients = 144

| Model 1 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 5      | 17     | 10     | 7      | 13         | 44     | 26     | 18     | 58            |
| CMS2    | 115      | 1      | 98     | 5      | 11     | 1          | 85     | 4      | 10     |               |
| CMS3    | 63       | 0      | 28     | 32     | 3      | 0          | 44     | 51     | 5      |               |
| CMS4    | 48       | 2      | 6      | 1      | 39     | 4          | 13     | 2      | 81     |               |

| Model 2 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 2      | 14     | 17     | 6      | 5          | 36     | 44     | 15     | 46            |
| CMS2    | 115      | 0      | 90     | 18     | 7      | 0          | 78     | 16     | 6      |               |
| CMS3    | 63       | 0      | 31     | 32     | 0      | 0          | 49     | 51     | 0      |               |
| CMS4    | 48       | 0      | 21     | 3      | 24     | 0          | 44     | 6      | 50     |               |

| Model 3 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 1      | 29     | 2      | 7      | 3          | 74     | 5      | 18     | 46            |
| CMS2    | 115      | 0      | 97     | 8      | 10     | 0          | 84     | 7      | 9      |               |
| CMS3    | 63       | 0      | 43     | 18     | 2      | 0          | 68     | 29     | 3      |               |
| CMS4    | 48       | 0      | 12     | 3      | 33     | 0          | 25     | 6      | 69     |               |

| Model 4 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 5      | 24     | 9      | 1      | 13         | 62     | 23     | 3      | 49            |
| CMS2    | 115      | 2      | 98     | 13     | 2      | 2          | 85     | 11     | 2      |               |
| CMS3    | 63       | 1      | 36     | 23     | 3      | 2          | 57     | 37     | 5      |               |
| CMS4    | 48       | 0      | 18     | 0      | 30     | 0          | 38     | 0      | 63     |               |

| Model 5 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 3      | 34     | 1      | 1      | 8          | 87     | 3      | 3      | 43            |
| CMS2    | 115      | 0      | 110    | 4      | 1      | 0          | 96     | 3      | 1      |               |
| CMS3    | 63       | 0      | 47     | 16     | 0      | 0          | 75     | 25     | 0      |               |
| CMS4    | 48       | 0      | 27     | 0      | 21     | 0          | 56     | 0      | 44     |               |

| Overall | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 3      | 24     | 8      | 4      | 8          | 62     | 21     | 10     | 49            |
| CMS2    | 115      | 0      | 103    | 6      | 6      | 0          | 90     | 5      | 5      |               |
| CMS3    | 63       | 0      | 41     | 21     | 1      | 0          | 65     | 33     | 2      |               |
| CMS4    | 48       | 0      | 16     | 1      | 31     | 0          | 33     | 2      | 65     |               |

## GRAMPIAN 12X - Adversarial Training (random forest)

n slides = 265, n patients = 144

| Model 1 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 14     | 10     | 13     | 2      | 36         | 26     | 33     | 5      | 62            |
| CMS2    | 115      | 6      | 61     | 41     | 7      | 5          | 53     | 36     | 6      |               |
| CMS3    | 63       | 0      | 9      | 51     | 3      | 0          | 14     | 81     | 5      |               |
| CMS4    | 48       | 6      | 2      | 3      | 37     | 13         | 4      | 6      | 77     |               |

| Model 2 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 21     | 11     | 6      | 1      | 54         | 28     | 15     | 3      | 58            |
| CMS2    | 115      | 7      | 79     | 19     | 10     | 6          | 69     | 17     | 9      |               |
| CMS3    | 63       | 3      | 28     | 28     | 4      | 5          | 44     | 44     | 6      |               |
| CMS4    | 48       | 10     | 5      | 2      | 31     | 21         | 10     | 4      | 65     |               |

| Model 3 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 13     | 21     | 5      | 0      | 33         | 54     | 13     | 0      | 62            |
| CMS2    | 115      | 7      | 90     | 13     | 5      | 6          | 78     | 11     | 4      |               |
| CMS3    | 63       | 4      | 16     | 41     | 2      | 6          | 25     | 65     | 3      |               |
| CMS4    | 48       | 5      | 5      | 3      | 35     | 10         | 10     | 6      | 73     |               |

| Model 4 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 19     | 10     | 7      | 3      | 49         | 26     | 18     | 8      | 61            |
| CMS2    | 115      | 10     | 84     | 14     | 7      | 9          | 73     | 12     | 6      |               |
| CMS3    | 63       | 6      | 13     | 43     | 1      | 10         | 21     | 68     | 2      |               |
| CMS4    | 48       | 7      | 12     | 3      | 26     | 15         | 25     | 6      | 54     |               |

| Model 5 | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 13     | 15     | 10     | 1      | 33         | 38     | 26     | 3      | 67            |
| CMS2    | 115      | 1      | 90     | 17     | 7      | 1          | 78     | 15     | 6      |               |
| CMS3    | 63       | 0      | 14     | 46     | 3      | 0          | 22     | 73     | 5      |               |
| CMS4    | 48       | 0      | 6      | 2      | 40     | 0          | 13     | 4      | 83     |               |

| Overall | n slides | Count  |        |        |        | Percentage |        |        |        | Macro average |
|---------|----------|--------|--------|--------|--------|------------|--------|--------|--------|---------------|
|         |          | imCMS1 | imCMS2 | imCMS3 | imCMS4 | imCMS1     | imCMS2 | imCMS3 | imCMS4 |               |
| CMS1    | 39       | 23     | 11     | 4      | 1      | 59         | 28     | 10     | 3      | 72            |
| CMS2    | 115      | 7      | 91     | 14     | 3      | 6          | 79     | 12     | 3      |               |
| CMS3    | 63       | 1      | 14     | 45     | 3      | 2          | 22     | 71     | 5      |               |
| CMS4    | 48       | 7      | 3      | 1      | 37     | 15         | 6      | 2      | 77     |               |