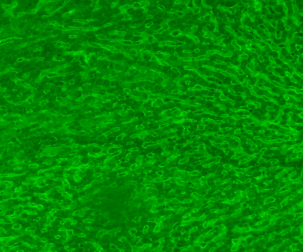
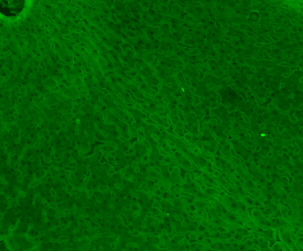
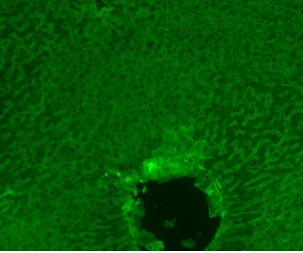
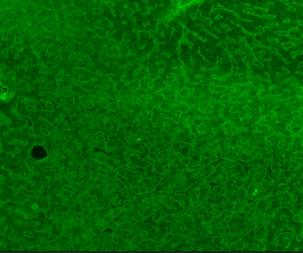


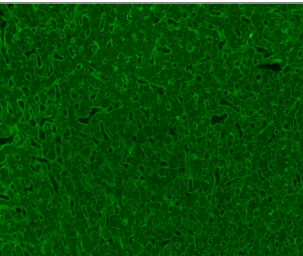
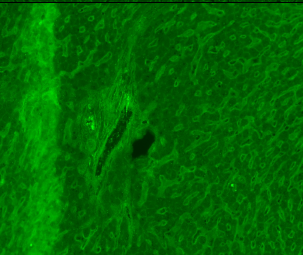
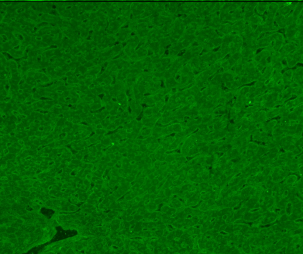
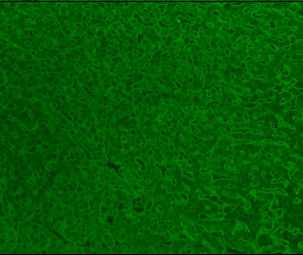
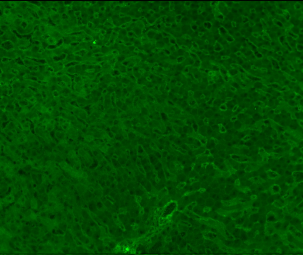
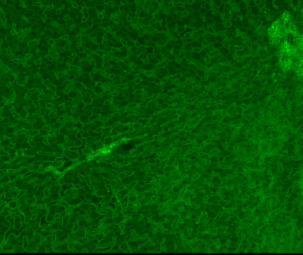
# Supplementary Table 1

## TTG Analysis Results Table

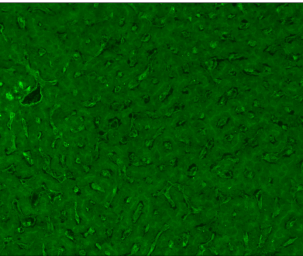
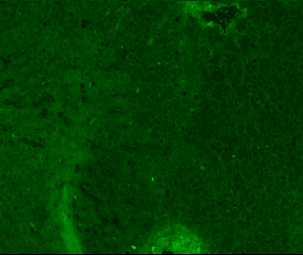
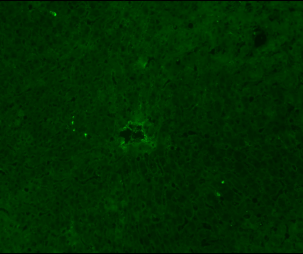
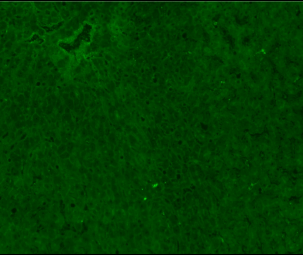
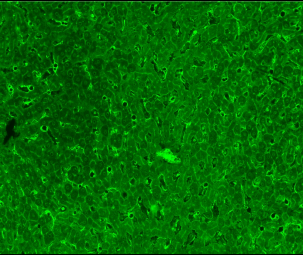
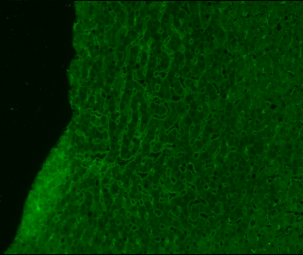
July 16, 2025

| Image                                                                               | Anti TTG IgA<br>ELISA (>20<br>RU/mL<br>positive) | Anti TTG<br>result | Experts' Final<br>Consideration                                              | ML Pre-<br>diction |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|------------------------------------------------------------------------------|--------------------|
|   | 7,6                                              | Negative           | Heterogeneous staining, similar to +1 positive but Anti-TTG negative patient | Gray Zone          |
|  | 48,3                                             | Positive           | Heterogenous staining, neither +1 positive nor negative.                     | Gray Zone          |
|  | 23,7                                             | Positive           | Heterogenous staining, neither +1 positive nor negative.                     | Gray Zone          |
|  | <2                                               | Negative           | Near to +1 positive, but Anti TTG negative                                   | Gray Zone          |

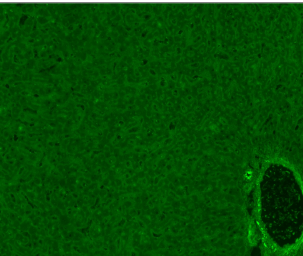
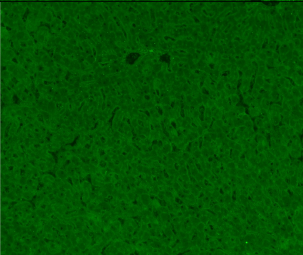
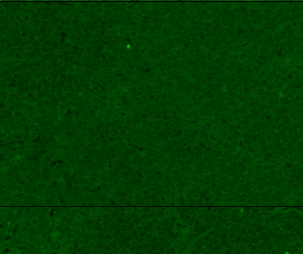
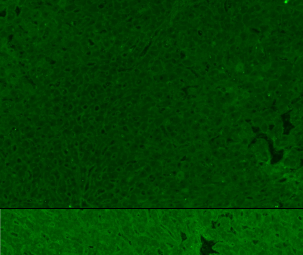
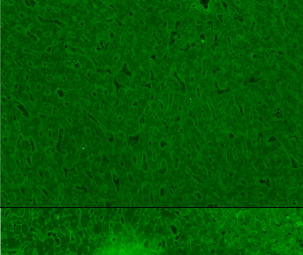
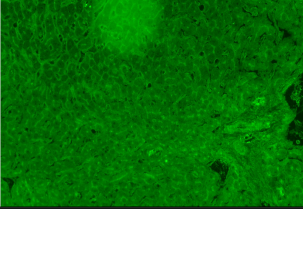
*Continued on next page*

| Image                                                                               | Anti TTG IgA<br>ELISA (>20<br>RU/mL<br>positive) | Anti TTG<br>result | Experts' Final<br>Consideration                          | ML Pre-<br>diction |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|----------------------------------------------------------|--------------------|
|    | <2                                               | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Weak<br>Positive   |
|    | <2                                               | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|   | 21                                               | Positive           | Near to negative but<br>slight positivity in<br>Anti TTG | Gray Zone          |
|  | 4,7                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|  | 10,3                                             | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|  | <2                                               | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |

*Continued on next page*

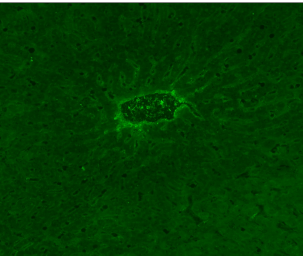
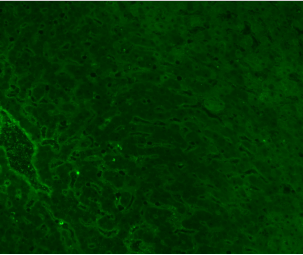
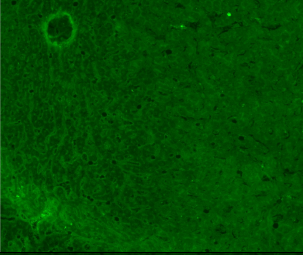
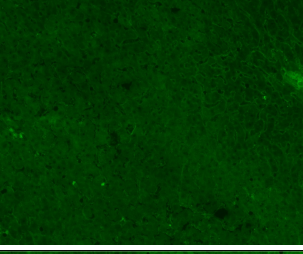
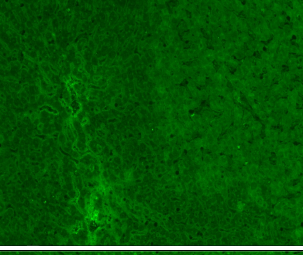
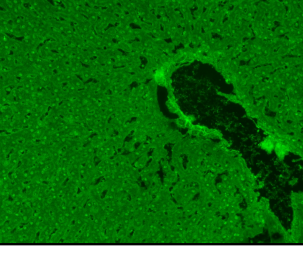
| Image                                                                               | Anti TTG IgA ELISA (>20 RU/mL positive) | Anti TTG result | Experts' Final Consideration                       | ML Prediction |
|-------------------------------------------------------------------------------------|-----------------------------------------|-----------------|----------------------------------------------------|---------------|
|    | 23,7                                    | Positive        | Near to negative but slight positivity in Anti TTG | Gray Zone     |
|    | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative         | Gray Zone     |
|   | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative         | Gray Zone     |
|  | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative         | Gray Zone     |
|  | 21                                      | Positive        | Near to negative but slight positivity in Anti TTG | Gray Zone     |
|  | 4,7                                     | Negative        | Near to +1 positive, but Anti TTG negative         | Gray Zone     |

*Continued on next page*

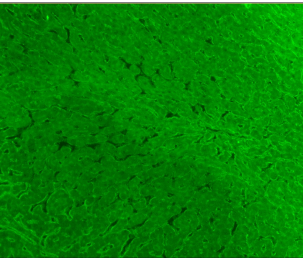
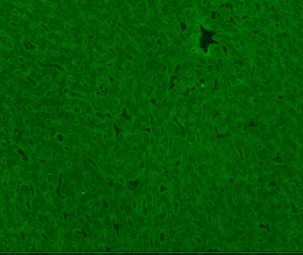
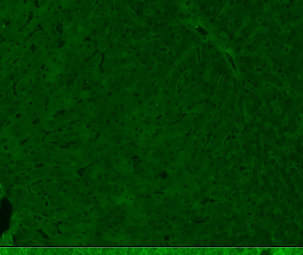
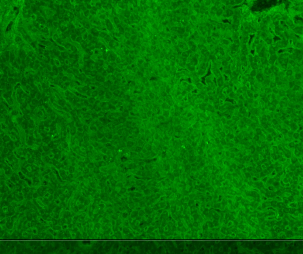
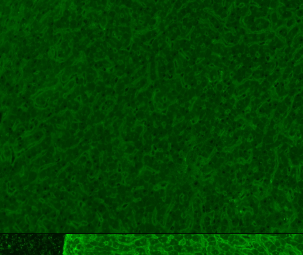
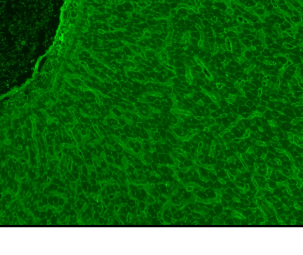
| Image                                                                               | Anti TTG IgA<br>ELISA (>20<br>RU/mL<br>positive) | Anti TTG<br>result | Experts' Final<br>Consideration                          | ML Pre-<br>diction |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|----------------------------------------------------------|--------------------|
|    | 10,3                                             | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|    | 22,4                                             | Positive           | Near to negative but<br>slight positivity in<br>Anti TTG | Gray Zone          |
|   | 8,3                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|  | 7,2                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|  | 18,9                                             | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |
|  | 7,1                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative         | Gray Zone          |

*Continued on next page*

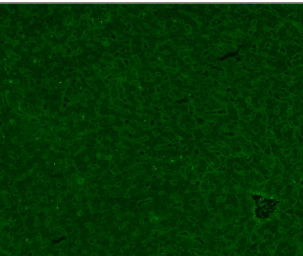
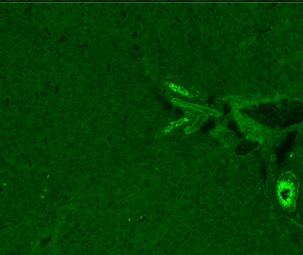
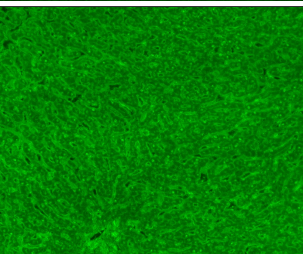
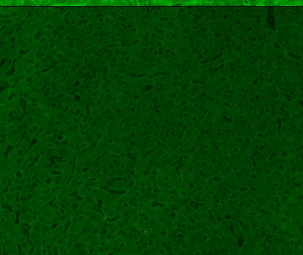
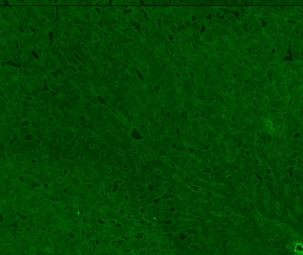
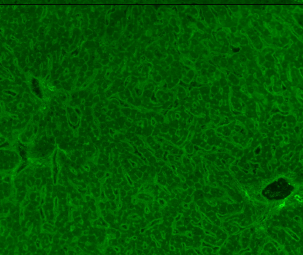


| Image                                                                               | Anti TTG IgA ELISA (>20 RU/mL positive) | Anti TTG result | Experts' Final Consideration                             | ML Prediction |
|-------------------------------------------------------------------------------------|-----------------------------------------|-----------------|----------------------------------------------------------|---------------|
|    | <2                                      | Negative        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|    | 32,4                                    | Positive        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|   | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|  | 30,7                                    | Positive        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|  | 57,3                                    | Positive        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|  | 11,3                                    | Negative        | Near to +1 positive, but Anti TTG negative               | Negative      |

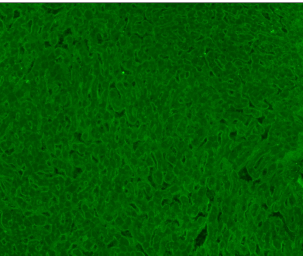
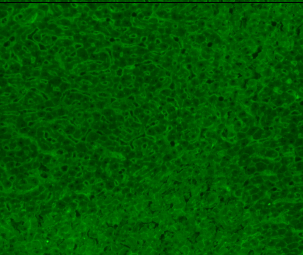
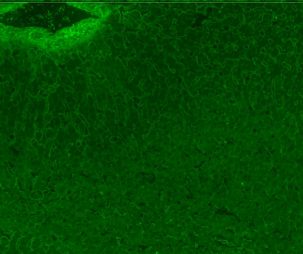
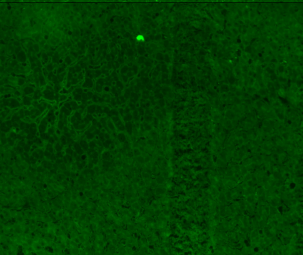
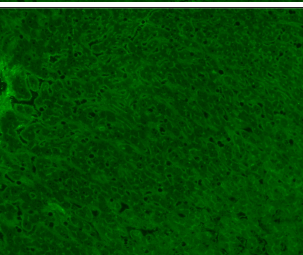
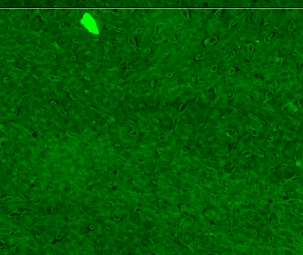
*Continued on next page*

| Image                                                                               | Anti TTG IgA ELISA (>20 RU/mL positive) | Anti TTG result | Experts' Final Consideration                             | ML Prediction |
|-------------------------------------------------------------------------------------|-----------------------------------------|-----------------|----------------------------------------------------------|---------------|
|    | 3,6                                     | Negative        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|    | 131,1                                   | Positive        | Near to negative but has strong Anti TTG positivity      | Gray Zone     |
|   | 31,3                                    | Positive        | Near to negative but slight positivity in Anti TTG       | Gray Zone     |
|  | 10,3                                    | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|  | 97,5                                    | Positive        | Near to negative but has strong Anti TTG positivity      | Gray Zone     |
|  | 2,5                                     | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |

*Continued on next page*

| Image                                                                               | Anti TTG IgA<br>ELISA (>20<br>RU/mL<br>positive) | Anti TTG<br>result | Experts' Final<br>Consideration                                   | ML Pre-<br>diction |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|-------------------------------------------------------------------|--------------------|
|    | 18                                               | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative                  | Gray Zone          |
|    | 3,4                                              | Negative           | Heterogenous<br>staining, neither +1<br>positive nor<br>negative. | Negative           |
|   | 7,1                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative                  | Gray Zone          |
|  | 2,4                                              | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative                  | Gray Zone          |
|  | 30,1                                             | Positive           | Near to negative but<br>slight positivity in<br>Anti TTG          | Gray Zone          |
|  | <2                                               | Negative           | Near to +1 positive,<br>but Anti TTG<br>negative                  | Weak<br>Positive   |

*Continued on next page*

| Image                                                                               | Anti TTG IgA ELISA (>20 RU/mL positive) | Anti TTG result | Experts' Final Consideration                             | ML Prediction |
|-------------------------------------------------------------------------------------|-----------------------------------------|-----------------|----------------------------------------------------------|---------------|
|    | 5,9                                     | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|    | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|   | 9,3                                     | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|  | 47,6                                    | Positive        | Heterogenous staining, neither +1 positive nor negative. | Gray Zone     |
|  | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |
|  | <2                                      | Negative        | Near to +1 positive, but Anti TTG negative               | Gray Zone     |

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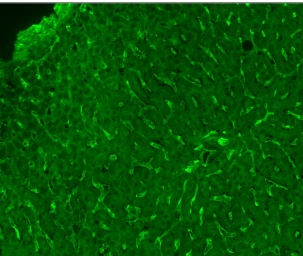
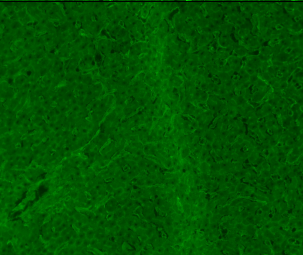
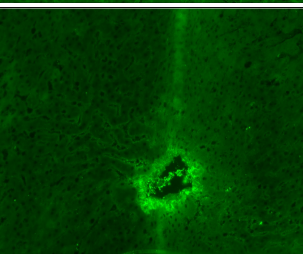
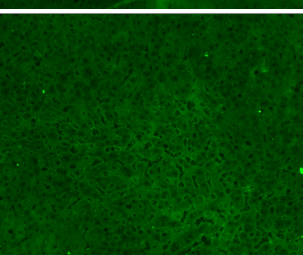
| Image                                                                               | Anti TTG IgA ELISA (>20 RU/mL positive) | Anti TTG result | Experts' Final Consideration                              | ML Prediction |
|-------------------------------------------------------------------------------------|-----------------------------------------|-----------------|-----------------------------------------------------------|---------------|
|    | 4,8                                     | Negative        | Near to +1 positive, but Anti TTG negative                | Gray Zone     |
|    | 7,4                                     | Negative        | Heterogenous staining, neither +1 positive nor negative.  | Gray Zone     |
|   | <2                                      | Negative        | Heterogeneous staining, neither +1 positive nor negative. | Gray Zone     |
|  | 12,3                                    | Negative        | Heterogeneous staining, neither +1 positive nor negative. | Gray Zone     |

Table 2: TTG Analysis Results with Grayzone Images