

## Supplementary File S20

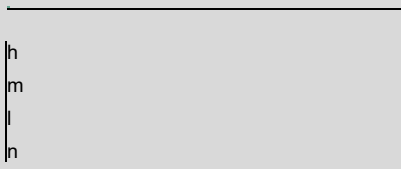
### The Human Protein Atlas data for validation of protein expressions of six-gene LAPS in LUSC

The Human Protein Atlas (HPA, <https://www.proteinatlas.org/>) database was conducted to validate the protein expression of six-gene **LAPS** between **LUSC tissues** and normal lung tissues via using immunohistochemistry (IHC) from HPA database.

#### 1-ALOX15B= lowly detected

| Lung cancer                                                                                               |                                    |
|-----------------------------------------------------------------------------------------------------------|------------------------------------|
| <b>HPA010562</b><br>Female, age 61<br>Lung (T-28000)<br>Adenocarcinoma, NOS (M-81403)<br>Patient id: 2003 |                                    |
| Tumor cells                                                                                               |                                    |
| Staining:                                                                                                 | <b>Low</b>                         |
| Intensity:                                                                                                | <b>Weak</b>                        |
| Quantity:                                                                                                 | <b>75%-25%</b>                     |
| Location:                                                                                                 | <b>Cytoplasmic/<br/>membranous</b> |

#### LUNG - Expression summary

|                                        |                                                                                     |              |                         |
|----------------------------------------|-------------------------------------------------------------------------------------|--------------|-------------------------|
| Protein expression<br>Lungi            |  |              |                         |
|                                        | Alveolar cells type I:                                                              | Not detected |                         |
|                                        | Alveolar cells type II:                                                             | Medium       |                         |
|                                        | Endothelial cells:                                                                  | Not detected |                         |
|                                        | Macrophages:                                                                        | Not detected |                         |
| Protein profiling<br>Multiplex tissuei |                                                                                     |              |                         |
| RNA expressioni                        | Consensus:                                                                          | 24.5         | nTPM                    |
|                                        | HPA:                                                                                | 17.8         | nTPM                    |
|                                        | GTEX:                                                                               | 24.5         | nTPM                    |
|                                        | FANTOM5:                                                                            | 96.8         | Scaled Tags Per Million |

#### LUNG - Antibody stainingi

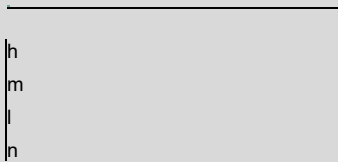
|                          |              |
|--------------------------|--------------|
|                          |              |
| Antibody HPA010562       |              |
| Alveolar<br>cells type I | Not detected |

|                        |              |
|------------------------|--------------|
| Alveolar cells type II | Medium       |
| Endothelial cells      | Not detected |
| Macrophages            | Not detected |

## 2-CYP24A1= not detected

|                                        |                     |
|----------------------------------------|---------------------|
| 100 µm                                 |                     |
| <b>Lung cancer</b>                     |                     |
| <b>HPA022261</b>                       |                     |
| Male, age 64                           |                     |
| Lung (T-28000)                         |                     |
| Bronchus (T-26000)                     |                     |
| Squamous cell carcinoma, NOS (M-80703) |                     |
| Normal tissue, NOS (M-00100)           |                     |
| Patient id: 4090                       |                     |
| <b>Tumor cells</b>                     |                     |
| Staining:                              | <b>Not detected</b> |
| Intensity:                             | <b>Negative</b>     |
| Quantity:                              | <b>None</b>         |

## LUNG - Expression summary

|                                        |                                                                                     |              |                         |
|----------------------------------------|-------------------------------------------------------------------------------------|--------------|-------------------------|
| Protein expression<br>Lungi            |  |              |                         |
|                                        | Alveolar cells:                                                                     | Not detected |                         |
|                                        | Macrophages:                                                                        | Not detected |                         |
| Protein profiling<br>Multiplex tissuei |                                                                                     |              |                         |
| RNA expressioni                        | Consensus:                                                                          | 0.7          | nTPM                    |
|                                        | HPA:                                                                                | 0.3          | nTPM                    |
|                                        | GTEx:                                                                               | 0.7          | nTPM                    |
|                                        | FANTOM5:                                                                            | 3.3          | Scaled Tags Per Million |

## 3-PPP2R2C= Medium expression

|                                        |  |
|----------------------------------------|--|
| <b>Lung cancer</b>                     |  |
| <b>HPA042770</b>                       |  |
| Male, age 65                           |  |
| Lung (T-28000)                         |  |
| Squamous cell carcinoma, NOS (M-80703) |  |
| Patient id: 2567                       |  |
| <b>Tumor cells</b>                     |  |

Staining: **Medium**

Intensity: **Moderate**

Quantity: **75%-25%**

Location: **Cytoplasmic/  
membranous**

**LUNG - Expression summary**

|                                        |                                                                                   |              |                         |
|----------------------------------------|-----------------------------------------------------------------------------------|--------------|-------------------------|
| Protein expression<br>Lungi            |  |              |                         |
|                                        | Alveolar cells:                                                                   | Not detected |                         |
|                                        | Macrophages:                                                                      | Not detected |                         |
| Protein profiling<br>Multiplex tissuei |                                                                                   |              |                         |
| RNA expressioni                        | Consensus:                                                                        | 0.1          | nTPM                    |
|                                        | HPA:                                                                              | 0.0          | nTPM                    |
|                                        | GTEx:                                                                             | 0.1          | nTPM                    |
|                                        | FANTOM5:                                                                          | 0.1          | Scaled Tags Per Million |

**4-PTGIS = low to medium**

**Lung cancer**

**CAB009517**  
Female, age 73  
Lung (T-28000)  
Squamous cell carcinoma, NOS (M-80703)  
Patient id: 3016

**Tumor cells**

Staining: **Low**

Intensity: **Weak**

Quantity: **75%-25%**

Location: **Cytoplasmic/  
membranous**

**LUNG - Expression summary**

|                                        |                                                                                     |        |      |
|----------------------------------------|-------------------------------------------------------------------------------------|--------|------|
| Protein expression<br>Lungi            |  |        |      |
|                                        | Alveolar cells:                                                                     | Low    |      |
|                                        | Macrophages:                                                                        | Medium |      |
| Protein profiling<br>Multiplex tissuei |                                                                                     |        |      |
| RNA expressioni                        | Consensus:                                                                          | 18.2   | nTPM |
|                                        | HPA:                                                                                | 13.2   | nTPM |

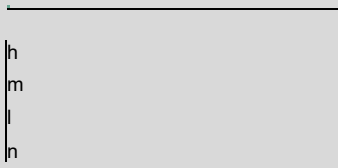
|  |          |      |                         |
|--|----------|------|-------------------------|
|  | GTEX:    | 18.2 | nTPM                    |
|  | FANTOM5: | 39.4 | Scaled Tags Per Million |

**5-SPTSSB= data not available**

**6-UGT2B17=not detected**

| Lung cancer                                                                                                      |                     |
|------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>HPA045108</b><br>Male, age 73<br>Lung (T-28000)<br>Squamous cell carcinoma, NOS (M-80703)<br>Patient id: 1937 |                     |
| Tumor cells                                                                                                      |                     |
| Staining:                                                                                                        | <b>Not detected</b> |
| Intensity:                                                                                                       | <b>Negative</b>     |
| Quantity:                                                                                                        | <b>None</b>         |

#### LUNG - Expression summary

|                                        |                                                                                     |              |                         |
|----------------------------------------|-------------------------------------------------------------------------------------|--------------|-------------------------|
| Protein expression<br>Lungi            |  |              |                         |
|                                        | Alveolar cells:                                                                     | Not detected |                         |
|                                        | Macrophages:                                                                        | Not detected |                         |
| Protein profiling<br>Multiplex tissuei |                                                                                     |              |                         |
| RNA expressioni                        | Consensus:                                                                          | 0.2          | nTPM                    |
|                                        | HPA:                                                                                | 0.2          | nTPM                    |
|                                        | GTEX:                                                                               | 0.0          | nTPM                    |
|                                        | FANTOM5:                                                                            | 0.0          | Scaled Tags Per Million |

#### LUNG - Antibody stainingi

|  |
|--|
|  |
|--|

|                |                    |
|----------------|--------------------|
|                | Antibody HPA045108 |
| Alveolar cells | Not detected       |
| Macrophages    | Not detected       |