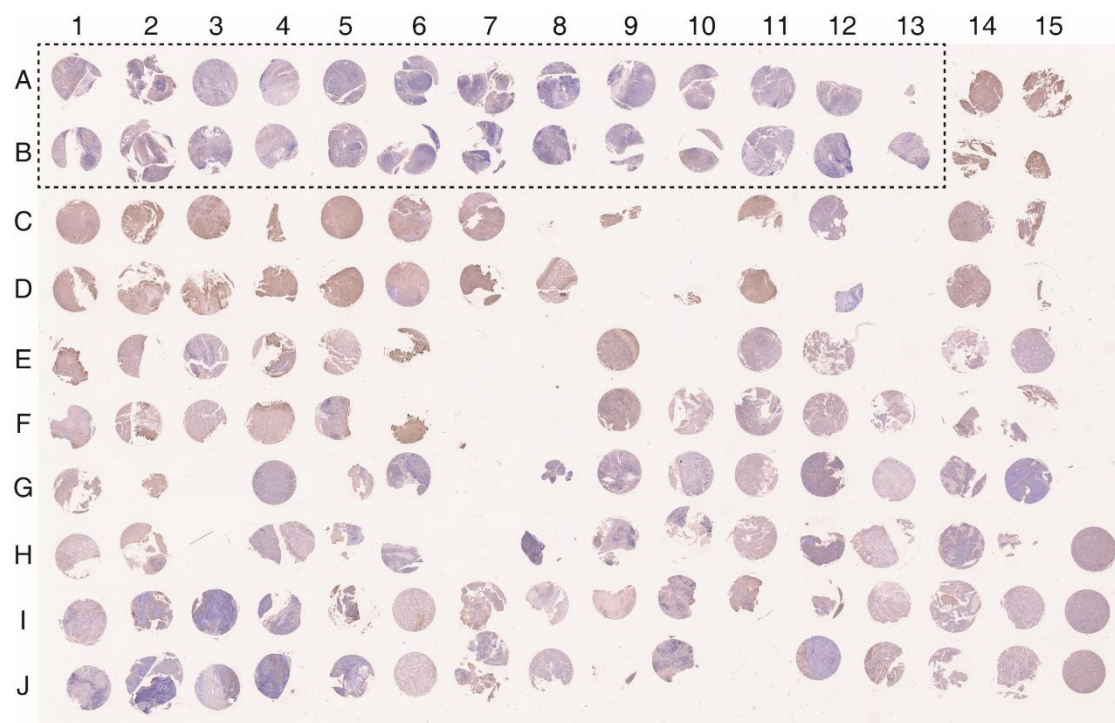


SWATH-based proteomics identified carbonic anhydrase 2 as a potential diagnosis biomarker for nasopharyngeal carcinoma

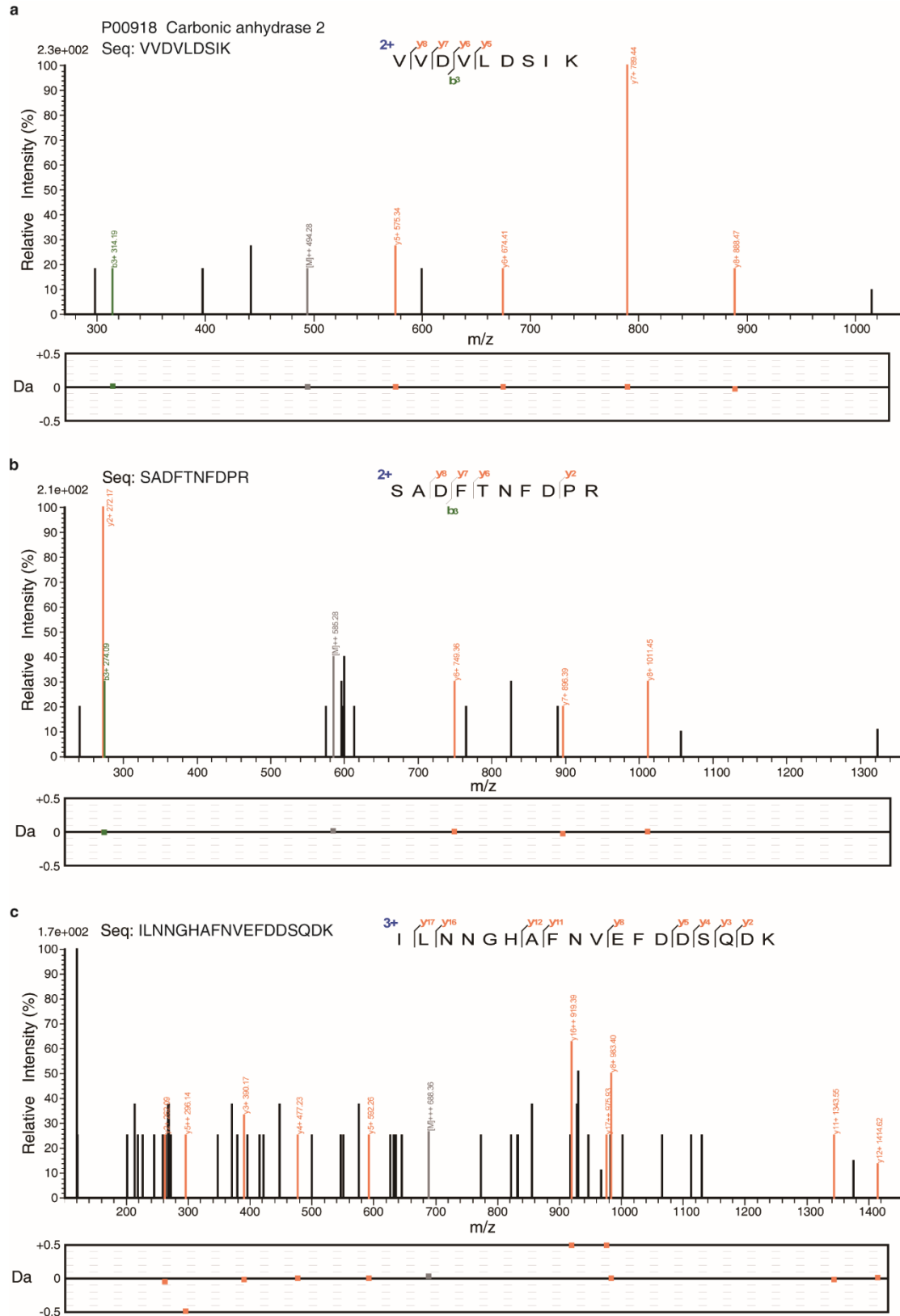
Yanzhang Luo, Tin-Seak Mok, Xiuxian Lin, Wanling Zhang, Yizhi Cui, Jiahui Guo, Xing Chen,

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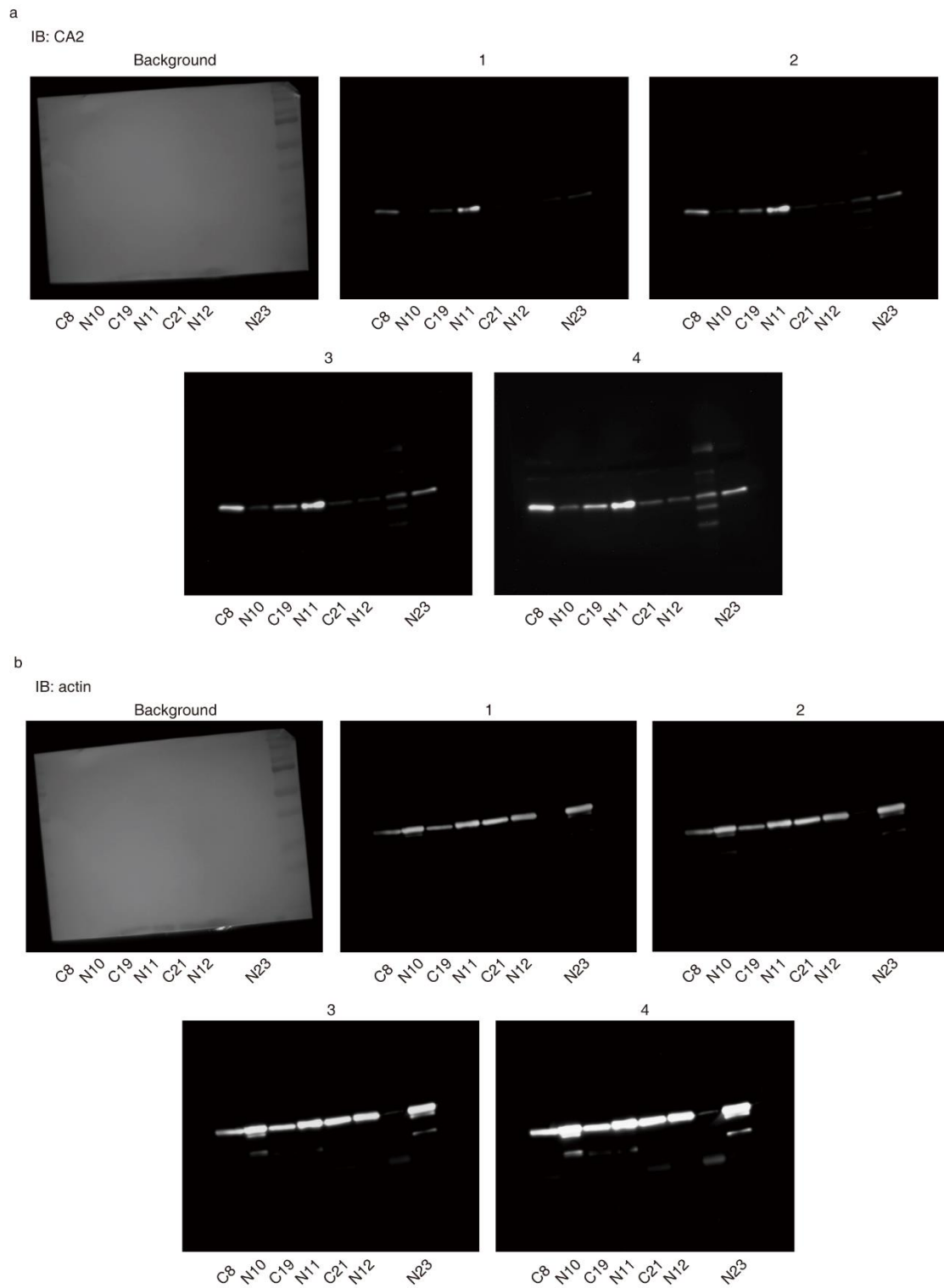
Supplementary Information



Supplementary Figure S1. Raw image of tissue microarray. Normal samples are shown in the dashed square box. Each sample has a replicate at the next vertical row. For example, samples in line B are replicates of line A at each donor tissue point. (NPC donor $n = 52$ and normal donor $n = 13$).



Supplementary Figure S2. MS spectra of CA2 peptides detected in the shotgun library construction identification.



Supplementary Figure S3. Raw image of the immunoblotting analysis on CA2 (a) and actin (b) with multiple exposures.

Supplementary Table S1. Donor feature summary.

| | Total | Gender | | Age | |
|-----------------|-------|--------|--------|--------|-----|
| | | Male | Female | < 50 | ≥50 |
| NPC | 11 | 8 | 3 | 6 | 5 |
| Normal | 13 | 9 | 4 | 11 | 2 |
| <i>P</i> | | 1.0000 | | 0.1819 | |

Supplementary Table S2. Differentially expressed proteins of SWATH-MS determined by PLGEM analysis.

| No. | Swiss-Prot ID | Protein name | NPC/normal abundance ratio | PLGEM STN | PLGEM P-value | HGNC gene name |
|-----|---------------|--|----------------------------|-----------|--------------------|-----------------|
| 1 | P62136 | Serine/threonine-protein phosphatase PP1-alpha catalytic subunit | 22.04 | 1.2 | 1.61×10^3 | <i>PPP1CA</i> |
| 2 | P19827 | Inter-alpha-trypsin inhibitor heavy chain H1 | 21.02 | 1.22 | 1.43×10^3 | <i>ITIHI</i> |
| 3 | P62987 | Ubiquitin-60S ribosomal protein L40 | 19.52 | 1.61 | 3.96×10^5 | <i>UBA52</i> |
| 4 | P48444 | Coatomer subunit delta | 11.61 | 1.08 | 4.53×10^3 | <i>ARCNI</i> |
| 5 | P30511 | HLA class I histocompatibility antigen, alpha chain F | 11.4 | 1 | 7.40×10^3 | <i>HLA-F</i> |
| 6 | P04004 | Vitronectin | 8.56 | 1.26 | 9.53×10^4 | <i>VTN</i> |
| 7 | P16157 | Ankyrin-1 | 8.48 | 0.98 | 8.64×10^3 | <i>ANK1</i> |
| 8 | P14174 | Macrophage migration inhibitory factor | 7.88 | 1.12 | 3.24×10^3 | <i>MIF</i> |
| 9 | P82650 | 28S ribosomal protein S22, mitochondrial | 7.4 | 1.01 | 6.93×10^3 | <i>MRPS22</i> |
| 10 | Q53G44 | Interferon-induced protein 44-like | 7.36 | 0.96 | 9.87×10^3 | <i>IFI44L</i> |
| 11 | Q04695 | Keratin, type I cytoskeletal 17 | 7.21 | 1.5 | 1.10×10^4 | <i>KRT17</i> |
| 12 | P09914 | Interferon-induced protein with tetratricopeptide repeats 1 | 6.88 | 1.05 | 5.39×10^3 | <i>IFIT1</i> |
| 13 | P00918 | Carbonic anhydrase 2 | 5.71 | 1.01 | 7.05×10^3 | <i>CA2</i> |
| 14 | P02675 | Fibrinogen beta chain | 5.27 | 1.33 | 5.17×10^4 | <i>FGB</i> |
| 15 | P50454 | Serpin H1 | 4.77 | 0.97 | 8.84×10^3 | <i>SERPINH1</i> |
| 16 | P02671 | Fibrinogen alpha chain | 4.73 | 1.16 | 2.36×10^3 | <i>FGA</i> |
| 17 | P62857 | 40S ribosomal protein | 4.29 | 0.96 | 9.40×10^3 | <i>RPS28</i> |

| S28 | | | | | | |
|-----|--------|---|------|-------|--------------------|-----------------|
| 18 | P61626 | Lysozyme C | 4.17 | 0.99 | 8.14×10^3 | <i>LYZ</i> |
| 19 | P02042 | Hemoglobin subunit delta | 3.85 | 1.18 | 1.89×10^3 | <i>HBD</i> |
| 20 | P59666 | Neutrophil defensin 3 | 3.83 | 0.96 | 9.58×10^3 | <i>DEFA3</i> |
| 21 | Q8WU39 | Marginal zone B- and B1-cell-specific protein | 3.44 | 1.02 | 6.74×10^3 | <i>MZB1</i> |
| 22 | Q15661 | Tryptase alpha/beta-1 | 0.2 | -1.06 | 6.69×10^3 | <i>TPSAB1</i> |
| 23 | P35237 | Serpin B6 | 0.18 | -1.06 | 6.71×10^3 | <i>SERPINB6</i> |
| 24 | Q6NZI2 | Polymerase I and transcript release factor | 0.13 | -1.26 | 1.36×10^3 | <i>PTRF</i> |
| 25 | P01892 | HLA class I histocompatibility antigen, A-2 alpha chain | 0.1 | -1.1 | 4.86×10^3 | <i>HLA-A</i> |
| 26 | Q9BVC6 | Transmembrane protein 109 | 0.1 | -1.33 | 7.29×10^4 | <i>TMEM109</i> |
| 27 | Q96FJ2 | Dynein light chain 2, cytoplasmic | 0.09 | -1.07 | 6.03×10^3 | <i>DYNLL2</i> |
| 28 | P00325 | Alcohol dehydrogenase 1B | 0.09 | -1.25 | 1.43×10^3 | <i>ADH1B</i> |
| 29 | P13693 | Translationally-controlled tumor protein | 0.06 | -1.11 | 4.61×10^3 | <i>TPT1</i> |

Supplementary Table S3. Identification and quantitation results of SWATH MS.

(Separate excel file)

Supplementary Table S4. Identification and quantitation results of super-SILAC MS.

(Separate excel file)

Supplementary Table S5. Clinicopathological information and CA2 staining results of the tissue microarray analysis.

(Separate excel file)