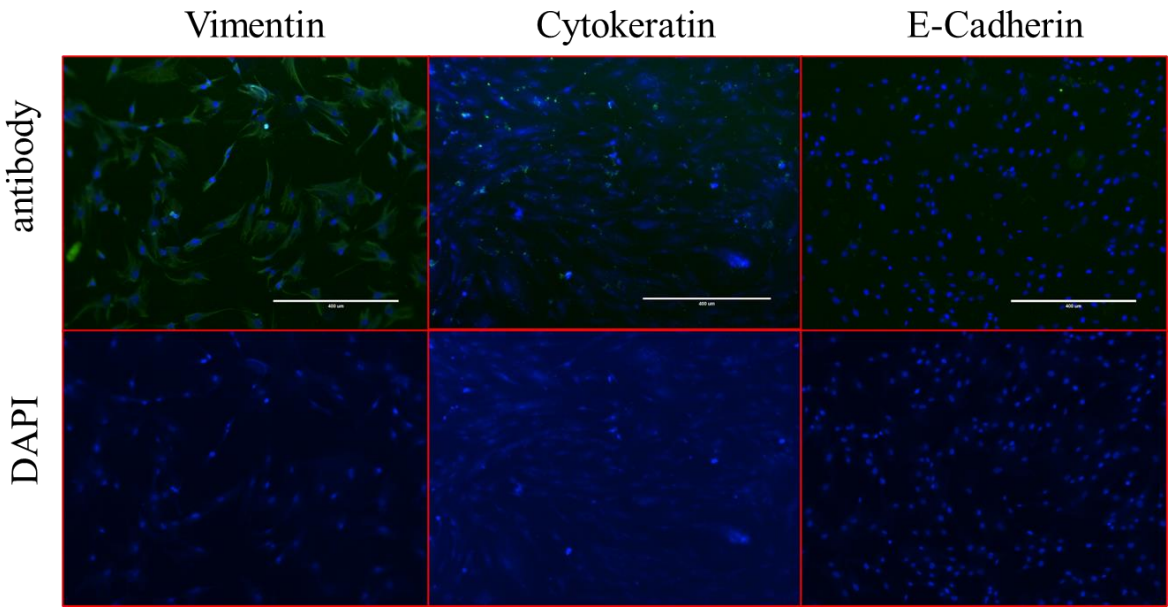
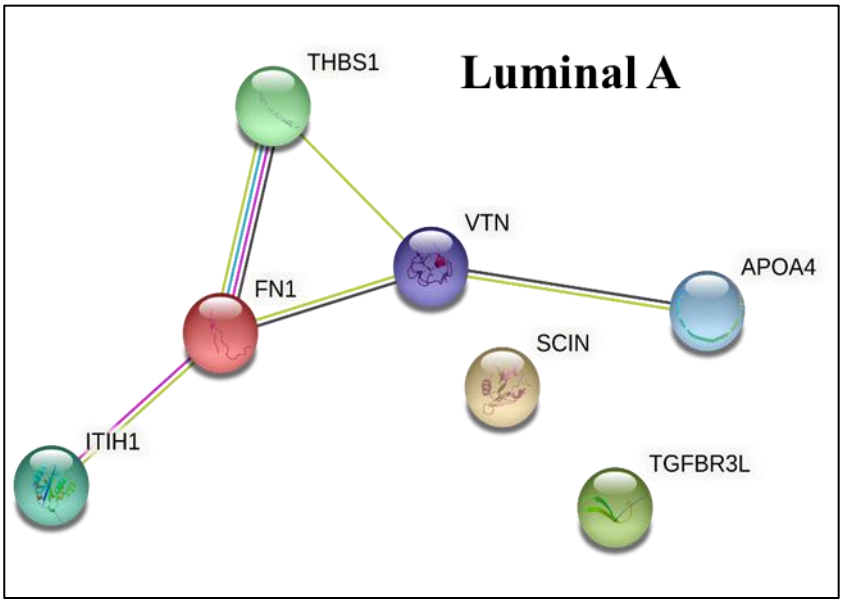
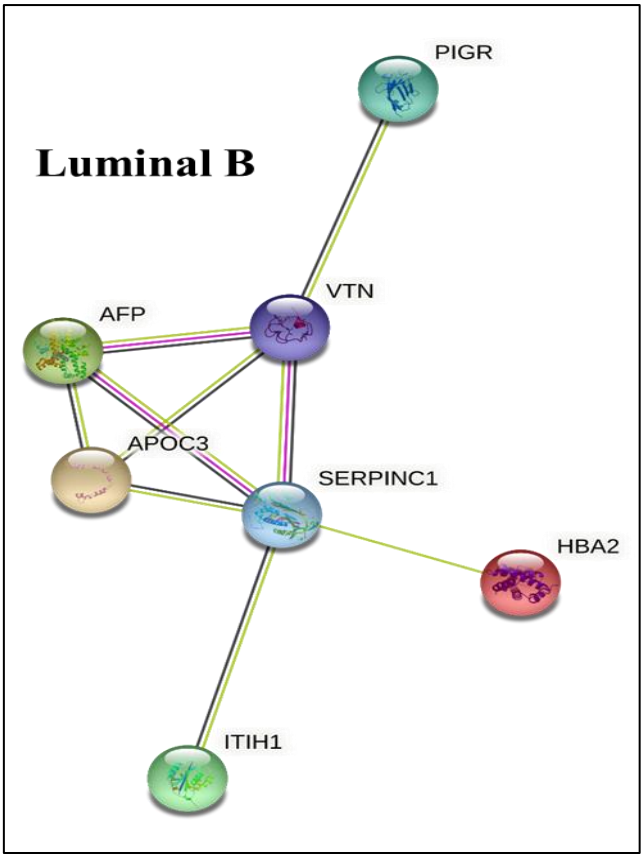


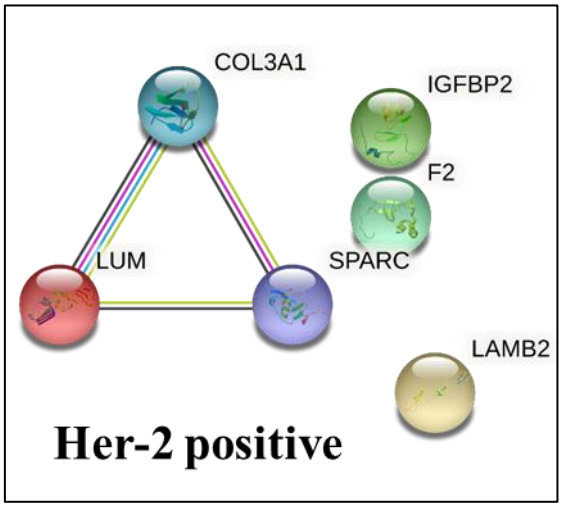

**Supplementary Figure-1**: Immunofluorescence images showing the characterization of fibroblasts isolated from breast cancer tissue. Vimentin antibody showed positive staining on fibroblasts. Cytokeratin and E-Cadherin immunostains were negative.




**Supplementary Figure-2a: Protein-Protein Interaction Networks Functional Enrichment Analysis in Luminal A**




**Supplementary Figure-2b: Protein-Protein Interaction Networks Functional Enrichment Analysis in Luminal B**




**Supplementary Figure-2c Protein-Protein Interaction Networks Functional Enrichment Analysis in Her-2 positive**

**Table-1: Comparative analysis showing the protein abundance in different breast cancer molecular subtypes.**

| Protein | Peptides | AAs | MW [kDa] | Luminal A / Luminal B | Luminal A / Her-2 + | Lumnal B / Her-2 + | Luminal A / TNBC | Luminal B / TNBC | Her-2 + / TNBC |
|---|---|---|---|---|---|---|---|---|---|
| Albumin | 3 | 609 | 69.3 | 1.277 | 0.916 | 0.934 | 3.997 | 1.312 | 0.936 |
| Inter-alpha-trypsin inhibitor heavy chain H2 | 3 | 946 | 106.4 | 0.579 | 22.875 | 100 | 28.289 | 48.866 | 1.162 |
| Alpha-fetoprotein | 3 | 609 | 68.6 | 0.673 | 27.753 | 41.254 | 17.91 | 26.624 | 0.645 |
| Talin-1 | 3 | 2541 | 269.6 | 1.032 | 3.524 | 3.416 | 3.561 | 3.451 | 1.01 |
| Hemoglobin subunit alpha | 2 | 142 | 15.2 | 0.29 | 86.409 | 100 | 19.974 | 68.778 | 0.231 |
| Apolipoprotein C-III | 1 | 99 | 10.8 | 0.182 | 1.754 | 9.627 | 0.881 | 4.834 | 0.502 |
| Transforming growth factor-beta-induced protein IG-H3 | 2 | 683 | 74.6 | 3.221 | 5.608 | 1.741 | 5.732 | 1.779 | 1.022 |
| Vitronectin | 1 | 478 | 54.3 | 7.737 | 9.662 | 1.249 | 17.454 | 2.256 | 1.806 |
| Thrombospondin-1 | 1 | 1170 | 129.3 | 3.101 | 100 | 41.809 | 98.992 | 31.926 | 0.764 |
| Lumican | 1 | 338 | 38.4 | 14.512 | 0.033 | 0.01 | 5.607 | 0.386 | 100 |
| Pigment epithelium-derived factor | 1 | 418 | 46.3 | 0.971 | 0.592 | 0.61 | 1.866 | 1.922 | 3.152 |
| Antithrombin-III | 2 | 464 | 52.6 | 0.011 | 0.46 | 41.568 | 0.519 | 46.956 | 1.13 |
| Vinculin | 1 | 1134 | 123.7 | 0.343 | 1.742 | 5.083 | 2.082 | 6.075 | 1.195 |
| Inter-alpha-trypsin inhibitor heavy chain H1 | 1 | 911 | 101.3 | 0.093 | 48.033 | 100 | 36.587 | 100 | 0.762 |
| Histone H2A type 3 | 1 | 130 | 14.1 | 1.247 | 1.946 | 1.561 | 1.374 | 1.102 | 0.706 |
| Polymeric immunoglobulin receptor | 1 | 764 | 83.2 | 0.451 | 1.245 | 2.759 | 1.476 | 3.271 | 1.186 |
| SPARC | 1 | 303 | 34.6 | 24.058 | 0.093 | 0.01 | 1.976 | 0.082 | 21.218 |
| Prothrombin | 1 | 622 | 70 | 0.22 | 0.055 | 0.248 | 19.838 | 90.088 | 100 |
| Alpha-2-HS-glycoprotein | 1 | 367 | 39.3 | 0.936 | 0.011 | 0.012 | 0.01 | 0.01 | 0.808 |
| Apolipoprotein A-IV O | 1 | 396 | 45.3 | 100 | 32.891 | 0.166 | 100 | 4.054 | 24.394 |
| Fibronectin | 1 | 2477 | 272.2 | 18.821 | 9.852 | 0.523 | 10.656 | 0.566 | 1.082 |
| Gelsolin | 1 | 782 | 85.6 | 7.17 | 4.006 | 0.559 | 6.627 | 0.924 | 1.654 |
| Collagen alpha-1(III) chain | 1 | 1466 | 138.5 | 0.026 | 0.01 | 0.321 | 1.784 | 67.78 | 100 |
| Insulin-like growth factor-binding protein 2 | 1 | 325 | 34.8 | 0.022 | 0.01 | 0.151 | 0.064 | 2.93 | 19.434 |
| Laminin subunit beta-2 | 1 | 1798 | 195.9 | 0.028 | 0.016 | 0.574 | 2.422 | 87.823 | 100 |