



Supplementary Materials

A Potential Serum *N*-glycan Biomarker for Hepatitis C Virus-Related Early-Stage Hepatocellular Carcinoma with Liver Cirrhosis

Mikito Higashi ^{1,2,†}, Takeshi Yoshimura ^{1,3,4,†,*}, Noriyoshi Usui ^{5,6}, Yuichiro Kano ¹, Akihiro Deguchi ⁷, Kazuhiro Tanabe ², Youichi Uchimura ^{2,¶}, Shigeki Kuriyama ^{7,¶}, Yasuyuki Suzuki ⁸, Tsutomu Masaki ⁷ and Kazuhiro Ikenaka ^{1,3,¶,*}

- ¹ Division of Neurobiology and Bioinformatics, National Institute for Physiological Sciences, National Institutes of Natural Sciences, Okazaki, Aichi 444-8787, Japan
- ² Mitsubishi Chemical Group Science and Technology Research Center, Yokohama, Kanagawa 227-8502, Japan
- ³ Department of Physiological Sciences, School of Life Sciences, SOKENDAI (The Graduate University for Advanced Studies), Hayama, Kanagawa 240-0193, Japan
- ⁴ Department of Child Development and Molecular Brain Science, United Graduate School of Child Development, Osaka University, Suita, Osaka 565-0871, Japan
- ⁵ Department of Neuroscience and Cell Biology, Graduate School of Medicine, Osaka University, Suita, Osaka 565-0871, Japan
- ⁶ Addiction Research Unit, Osaka Psychiatric Research Center, Osaka Psychiatric Medical Center, Osaka 541-8567, Japan
- ⁷ Department of Gastroenterology and Neurology, Faculty of Medicine, Kagawa University, Kita-gun, Kagawa 761-0793, Japan
- ⁸ Department of Gastroenterological Surgery, Faculty of Medicine, Kagawa University, Kita-gun, Kagawa 761-0793, Japan
- * Correspondence: tyoshimu@ugscd.osaka-u.ac.jp (T.Y.); ikenaka@nips.ac.jp (K.I.)
- * These authors contributed equally to this work.
- ¶ Deceased.

Supplementary Materials and Methods

Sample preparations

Human sera from subjects with no obvious liver diseases were obtained from Soiken Holdings Inc, Tokyo, Japan. Cold acetone (9 mL) was added to 1 mL of serum; the sample was mixed well and centrifuged at 4,000 × g for 20 min at 4 °C. Preparations of pyridylaminated *N*-glycans [1-3] and neutral and desialylated *N*-glycans [1-9] were performed as previously described. For pyridylaminated *N*-glycans, a lyophilized sample (2 mg) was heated with 200 μ L anhydrous hydrazine (Tokyo Chemical Industry, Tokyo, Japan) at 100 °C for 10 h to release sugar chains. The hydrazine solution was then mixed with 3 mL 50 mM ammonium acetate buffer (pH 7.0) and loaded onto a graphite carbon column (GL Science, Tokyo, Japan). Oligosaccharides were eluted with 5 mL of a mixed solution (20 mM triethylamine acetate buffer (pH 7.0) and 60% acetonitrile containing 2% acetic anhydride). The eluted solution was dried using a SpeedVac to obtain the *N*-acetylated oligosaccharides. For neutral and desialylated *N*-glycans, purified glycans were tagged with a fluorophore, 2-aminopyridine. Excess reagent was removed with a cellulose cartridge column (Takara Bio, Ohtsu, Japan). Pyridylaminated (PA)-oligosaccharides were divided into two equal volumes. One half was applied to a DE52 column (Whatman, GE Healthcare, Little Chalfont, UK) equilibrated with water adjusted to pH 9.0 by 1 M aqueous ammonia [1]; the non-adsorbed fraction was collected. The other half was treated with neuraminidase (Nacalai Tesque, Kyoto, Japan) and applied to a DE52 column.

N-glycan analyses

Analyses of PA-N-glycans using HPLC were performed as described previously [1,3,9]. Sodium dodecyl sulfatepolyacrylamide gel electrophoresis (SDS-PAGE) with Coomassie Brilliant Blue (CBB) staining and N-glycan analysis from SDS-PAGE gels were also performed as described previously [3]. Fluorescent-tagged glycans were analyzed by HPLC using a NP column (Shodex Asahipak NH2P-50 4E, 4.6 × 250 mm, Showa Denko, Tokyo, Japan). The mobile phase consisted of solvent A (50 mM ammonium acetate buffer containing 93% acetonitrile, pH 7.0) and solvent B (50 mM ammonium acetate buffer containing 20% acetonitrile, pH 7.0) and the following gradient: linear gradient from 25-42% solvent B at 0.6 mL/min for 180 min followed by a linear gradient from 52-100% solvent B for the next 3 min. NP-HPLC analysis was performed using the Prominence HPLC system with a fluorescence detector (excitation and emission wavelengths of 310 nm and 380 nm, respectively) (Shimadzu, Kyoto, Japan). Each detected PA-N-glycan was further analyzed by RP-HPLC using a Develosil C30-UG-5 column (4.6 × 150 mm, Nomura Chemical, Seto, Japan). The mobile phase consisted of solvent A (5 mM ammonium acetate, pH 4.0) and solvent B (10% acetonitrile with solvent A). The flow rate was 0.5 mL/min and monitored by a fluorescence detector (FP-2025 Plus, JASCO, Hachioji, Japan) using excitation and emission wavelengths of 320 nm and 400 nm, respectively. Glycan structures were identified by calculating the Mannose-Unit value in NP-HPLC and the Glucose-Unit value in RP-HPLC as previously described [5,7] or by comparison to known standards and sequential exoglycosidase digestion. Anion-exchange chromatography was performed using a MonoQ HR5/5 column (5 × 50 mm, GE Healthcare) at a flow rate of 1.0 mL/min at room temperature. Solvent C was distilled H₂O titrated to pH 9.0 with 1 M aqueous ammonia, and solvent D was 0.5 M ammonium acetate (pH 9.0). The column was equilibrated with solvent C. After injecting a sample, the proportion of solvent D was increased linearly to 12% in 3 min, to 40% in 14 min, and to 100% in 5 min. PAsugar chains were detected at an excitation wavelength of 310 nm and emission wavelength of 380 nm (FP-2025 Plus, JASCO).

Data quantification and statistical analysis

NP-HPLC and RP-HPLC chromatogram data were analyzed with LC station software (Shimadzu) and Empower2 software (Waters, Milford, MA, USA), respectively. Statistical analyses (ROC curve and Pearson's r) were performed using GraphPad Prism7.

Supplementary References

- Torii, T.; Yoshimura, T.; Narumi, M.; Hitoshi, S.; Takaki, Y.; Tsuji, S.; Ikenaka, K. Determination of major sialylated N-glycans and identification of branched sialylated N-glycans that dynamically change their content during development in the mouse cerebral cortex. *Glycoconj. J.* 2014, *31*, 671-683.
- 2. Tanabe, K.; Ikenaka, K. In-column removal of hydrazine and N-acetylation of oligosaccharides released by hydrazionolysis. *Anal. Biochem.* **2006**, *348*, 324-326.
- Yoshimura, T.; Yamada, G.; Narumi, M.; Koike, T.; Ishii, A.; Sela, I.; Mitrani-Rosenbaum, S.; Ikenaka, K. Detection of N-glycans on small amounts of glycoproteins in tissue samples and sodium dodecyl sulfate-polyacrylamide gels. *Anal. Biochem.* 2012, 423, 253-260.
- 4. Hase, S.; Natsuka, S.; Oku, H.; Ikenaka, T. Identification method for twelve oligomannose-type sugar chains thought to be processing intermediates of glycoproteins. *Anal. Biochem.* **1987**, *167*, 321-326.
- Hase, S. High-performance liquid chromatography of pyridylaminated saccharides. *Methods Enzymol.* 1994, 230, 225-237.
- Fujimoto, I.; Menon, K.K.; Otake, Y.; Tanaka, F.; Wada, H.; Takahashi, H.; Tsuji, S.; Natsuka, S.; Nakakita, S.i.; Hase, S.; Ikenaka, K. Systematic analysis of N-linked sugar chains from whole tissue employing partial automation. *Anal. Biochem.* 1999, 267, 336-343.
- Otake, Y.; Fujimoto, I.; Tanaka, F.; Nakagawa, T.; Ikeda, T.; Menon, K.K.; Hase, S.; Wada, H.; Ikenaka, K. Isolation and characterization of an N-linked oligosaccharide that is significantly increased in sera from patients with non-small cell lung cancer. *J. Biochem.* 2001, *129*, 537-542.
- Ishii, A.; Ikeda, T.; Hitoshi, S.; Fujimoto, I.; Torii, T.; Sakuma, K.; Nakakita, S.; Hase, S.; Ikenaka, K. Developmental changes in the expression of glycogenes and the content of N-glycans in the mouse cerebral cortex. *Glycobiology* 2007, 17, 261-276.
- Yoshimura, T.; Hayashi, A.; Handa-Narumi, M.; Yagi, H.; Ohno, N.; Koike, T.; Yamaguchi, Y.; Uchimura, K.; Kadomatsu, K.; Sedzik, J.; Kitamura, K.; Kato, K.; Trapp, B.D.; Baba, H.; Ikenaka, K. GlcNAc6ST-1 regulates sulfation of N-glycans and myelination in the peripheral nervous system. *Sci. Rep.* 2017, *7*, 42257.

Supplementary Table S1. Reproducibility of *N*-glycan recovery rate for 3 *N*-glycans.

| Pak No. | 4 | 13 | 15 |
|----------------------|-----------------|---------------|-----------------|
| Area (mean \pm SD) | 23.92 ± 1.5 | 14.72 ± 0.8 | 17.87 ± 1.1 |
| CV value (%) | 6.2 | 5.7 | 6.1 |

Supplementary Table S2. ROC curve of A2G1(6)FB in HCC.

| | HCV-HCC/LC | |
|-------------------------|-----------------|--|
| Area | 0.9614 | |
| Std. Error | 0.0346 | |
| 95% confidence interval | 0.8936 to 1.029 | |
| P value | < 0.0001 | |

| Sensitivity% 9% C1 Specificity% 9% C1 Likelihood nuic > 0.03 100 93.51% to 100% 2.817 0.343% to 9.808% 1.029 > 0.045 100 93.51% to 100% 5.044 1.550% to 13.5% 1.06 > 0.055 100 93.51% to 100% 1.831 10.13% to 29.27% 1.224 > 0.055 100 93.51% to 100% 2.81 10.13% to 29.27% 1.224 > 0.055 100 93.51% to 100% 2.81 10.13% to 29.27% 1.224 > 0.055 100 93.51% to 100% 2.93 1.224 2.61 > 0.155 100 93.51% to 100% 40.3 2.32% to 51.4% 1.07 > 0.155 100 93.51% to 100% 50.66 64.46% to 85.39% 5.071 > 0.155 100 93.51% to 100% 50.28 63.455 5.071 > 0.165 100 93.51% to 100% 95.77 88.14% to 88.27% 5.071 > 0.165 100 93.51% to 100% 95.77 88.14% to 99.6% | HCV-HCC/HC | | | | | | | | |
|--|------------|--------------|--------------------|--------------|------------------------------------|------------------|--|--|--|
| > 0.02 100 9.51% to 100% 2.817 0.343% to 9.05% 1.029 > 0.045 100 9.51% to 100% 4.25 0.83% to 11.85% 1.044 > 0.005 100 9.51% to 100% 1.26 5.56% to 13.8% 1.06 > 0.005 100 9.51% to 100% 2.81 1.81% to 40.1% 1.92 > 0.005 100 9.51% to 100% 4.81 1.81% to 40.1% 1.92 > 0.005 100 9.51% to 100% 4.93 77.22% to 61.4% 1.424 > 0.005 100 9.51% to 100% 6.62 3.59% to 77% 2.958 > 0.15 100 9.51% to 100% 6.62 3.59% to 77% 2.958 > 0.15 100 9.51% to 100% 7.66 64.44% to 87.7% 3.381 > 0.145 100 9.51% to 100% 84.51 7.37% to 92% 6.455 > 0.15 100 9.51% to 100% 97.18 81.18% to 98.26% 3.57 > 0.21 100 9.51% to 100% 97.38 81.14% to 99.5% | | Sensitivity% | 95% CI | Specificity% | 95% CI | Likelihood ratio | | | |
| > 0.085 100 9.351% to 100% 4.225 0.88% to 13.8% 1.04 > 0.065 100 9.351% to 100% 12.68 5.964% to 22.7% 1.145 > 0.075 100 9.351% to 100% 18.81 10.13% to 22.7% 1.224 > 0.085 100 9.351% to 100% 48.81 18.13 10.13% to 61.4% > 0.095 100 9.351% to 100% 40.35 29.23% to 51.4% 1.097 > 0.115 100 9.351% to 100% 64.27 48.67% to 72.24% 2.63 > 0.125 100 9.351% to 100% 60.2 3.99% to 714 2.958 > 0.125 100 9.351% to 100% 70.42 85.41% to 83.67% 3.31 > 0.125 100 9.351% to 100% 70.52 82.51% to 85.36% 11.83 > 0.18 100 9.351% to 100% 9.15 82.41% to 83.36% 10.71 > 0.22 100 9.351% to 100% 9.15 82.44% to 99.45% 0.71 > 0.23 9.91 80.051% to 69.85% 10.09 | > 0.02 | 100 | 93.51% to 100% | 2.817 | 0.343% to 9.808% | 1.029 | | | |
| > 0.053 100 9.151% to 100% 5.6.44 1.559% to 13.8% 1.06 > 0.065 100 9.351% to 100% 2.8.1 1.131% to 40.1% 1.224 > 0.005 100 9.351% to 100% 2.8.17 1.8.13% to 40.1% 1.329 > 0.005 100 9.351% to 100% 40.3 3.223% to 61.44% 1.972 > 0.105 100 9.351% to 100% 6.4.2 3.39% to 61.44% 1.724% > 0.125 100 9.351% to 100% 6.4.2 5.39%% to 77% 2.98 > 0.135 100 9.351% to 100% 70.66 6.4.40% to 85.39% 4.176 > 0.145 100 9.351% to 100% 97.18 90.14% 1.183 > 0.145 100 9.351% to 100% 97.18 90.19% to 92.5% 2.367 > 0.2 100 9.351% to 100% 97.18 90.19% to 92.6% 6.71 > 0.22 100 9.351% to 100% 97.18 90.19% to 92.6% 6.71 > 0.23 95.18% to 100% 97.18 90.19% to 92.6% | > 0.045 | 100 | 93.51% to 100% | 4.225 | 0.88% to 11.86% | 1.044 | | | |
| > 0.065 100 93 51% to 100% 12.68 5.964% to 22.7% 1.145 > 0.075 100 93.51% to 100% 23.17 18.13% to 40.1% 1.392 > 0.055 100 93.51% to 100% 40.35 29.32% to 53.16% 1.69 > 0.155 100 93.51% to 100% 61.37 49.67% to 73.24% 2.63 > 0.125 100 93.51% to 100% 61.47 49.67% to 73.24% 2.63 > 0.125 100 93.51% to 100% 60.2 53.99% to 73% 3.381 > 0.145 100 93.51% to 100% 70.42 58.41% to 88.78% 5.071 > 0.165 100 93.51% to 100% 97.15 85.16% to 85.39% 4.176 > 0.22 100 93.51% to 100% 97.17 88.14% to 89.12% 3.67 > 0.23 96.16 90.25% to 99.05% 95.55 2.63 92.56% 95.55 > 0.23 96.16 99.25% 99.06% 66.71 > 0.25 90.25% 90.25% to 99.06% 66.71 | > 0.055 | 100 | 93.51% to 100% | 5.634 | 1.556% to 13.8% | 1.06 | | | |
| > 0.075 100 93 51% to 100% 18.31 10.13% to 22.7% 1.224 > 0.085 100 93.51% to 100% 40.85 23.32% to 31.64% 1.60 > 0.015 100 93.51% to 100% 40.85 23.32% to 31.64% 2.63 > 0.125 100 93.51% to 100% 66.2 33.99% to 77% 2.958 > 0.135 100 93.51% to 100% 76.66 64.46% to 83.79% 4.176 > 0.145 100 93.51% to 100% 76.66 64.46% to 53.99% 4.176 > 0.155 100 93.51% to 100% 95.15% 86.84% 5.071 > 0.163 100 93.51% to 100% 95.77 83.24% to 98.64% 5.35 > 0.18 100 93.51% to 100% 97.18 90.49% to 99.64% 3.5 > 0.22 100 93.51% to 100% 97.18 90.49% to 00% 64.2 > 0.23 99.25% to 88.45% 100 94.49% to 100% 64.2 > 0.23 97.27 85.25% to 96.45% to 99.6% 96.42 | > 0.065 | 100 | 93.51% to 100% | 12.68 | 5.964% to 22.7% | 1.145 | | | |
| > 0.085 100 93.51% to 100% 28.17 18.13% to 40.15% 1.392 > 0.095 100 93.51% to 100% 40.35 29.32% to 51.44% 1.372 > 0.115 100 93.51% to 100% 60.37 49.67% to 73.22% 2.63 > 0.125 100 93.51% to 100% 70.42 58.41% to 85.07% 3.81 > 0.145 100 93.51% to 100% 70.42 58.41% to 85.39% 4.176 > 0.155 100 93.51% to 100% 80.28 60.14% to 85.39% 5.071 > 0.165 100 93.51% to 100% 91.5 2.251% to 25.5% 5.677 > 0.22 100 93.51% to 100% 97.7 88.14% to 99.12% 2.567 > 0.23 92.13% to 100% 97.73 89.14% to 99.96% 66.42 > 0.26 94.55 84.85% to 99.5% 90.24% to 99.96% 66.42 > 0.26 94.55 84.85% to 99.5% 100 94.94% to 100% > 0.23 87.27 75.52% to 99.5% 90.24% to 99.96% 66.42 | > 0.075 | 100 | 93.51% to 100% | 18.31 | 10.13% to 29.27% | 1.224 | | | |
| > 0.095 100 93.51% to 100% 40.35 29.22% to 51.46% 1.69 > 0.103 100 93.51% to 100% 61.37 49.67% to 73.24% 2.63 > 0.125 100 93.51% to 100% 66.2 53.99% to 75% 2.988 > 0.145 100 93.51% to 100% 76.66 64.46% to 53.59% 4.176 > 0.155 100 93.51% to 100% 80.86 61.44% to 88.79% 5.071 > 0.155 100 93.51% to 100% 80.25 61.44% to 85.79% 6.455 > 0.18 100 93.51% to 100% 91.55 82.31% to 99.66% 35.5 > 0.22 100 93.51% to 100% 97.18 90.19% to 99.66% 66.71 > 0.23 90.30 87.47% to 99.5% 90.24% to 99.6% 66.42 > 0.26 > 0.23 90.31 80.05% to 99.6% 100 94.44% to 100% > 0.27 > 0.235 90.30 80.05% to 90.6% 100 94.44% to 100% > 0.27 > 0.235 90.31 80.05% to 90.6% 100 | > 0.085 | 100 | 93.51% to 100% | 28.17 | 18.13% to 40.1% | 1.392 | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.095 | 100 | 93.51% to 100% | 40.85 | 29.32% to 53.16% | 1.69 | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.105 | 100 | 93.51% to 100% | 49.3 | 37.22% to 61.44% | 1.972 | | | |
| > 0.125 100 93.51% to 100% 66.2 53.99% to 77% 2.958 > 0.135 100 93.51% to 100% 70.42 S8.41% to 80.75% 3.381 > 0.145 100 93.51% to 100% 80.28 69.14% to 88.75% 6.675 > 0.165 100 93.51% to 100% 84.51 73.75% to 92% 6.635 > 0.18 100 93.51% to 100% 97.17 88.44% to 99.12% 2.67 > 0.22 100 93.51% to 100% 97.18 90.19% to 99.66% 35.5 > 0.235 98.18 90.28% to 99.95% 98.59 92.44% to 99.96% 66.71 > 0.245 94.55 84.89% to 97.89% 100 94.94% to 100% 46.42 > 0.25 90.73 82.41% to 97.95% 100 94.94% to 100% 46.42 > 0.245 90.91 80.05% to 69.85% 100 94.94% to 100% 46.42 > 0.235 90.91 80.05% to 69.85% 100 94.94% to 100% 46.42 > 0.235 77.73 82.04% to 83.86% 1 | > 0 115 | 100 | 93 51% to 100% | 61.97 | 49 67% to 73 24% | 2.63 | | | |
| > 0.13 100 93.51% to 100% 70.42 58.41% to 80.67% 3.381 > 0.145 100 93.51% to 100% 70.66 64.40% to 83.39% 4.176 > 0.155 100 93.51% to 100% 84.51 73.97% to 92% 64.55 > 0.18 100 93.51% to 100% 94.55 82.51% to 96.84% 11.83 > 0.22 100 93.51% to 100% 97.71 88.14% to 99.65% 66.71 > 0.23 98.18 90.28% to 99.56% 98.59 92.24% to 99.65% 66.71 > 0.245 94.56 87.47% to 95.56% 90.59 98.59 92.4% to 99.66% 66.71 > 0.255 94.55 84.88% to 98.86% 100 94.94% to 100% 5 > 0.255 90.91 80.05% to 96.88% 100 94.94% to 100% 5 > 0.33 87.27 75.28% to 94.73% 100 94.94% to 100% 5 > 0.355 77.33 90.46% to 83.57% 100 94.94% to 100% 5 > 0.355 77.33 90.49% to 83.27% | > 0.125 | 100 | 93 51% to 100% | 66.2 | 53 99% to 77% | 2.958 | | | |
| $\begin{array}{c c c c c c c } > 0.145 & 100 & 93.51\% to 100\% & 76.66 & 64.40\% to 85.39\% & 4.176 \\ > 0.155 & 100 & 93.51\% to 100\% & 80.28 & 09.14\% to 88.78\% & 5.071 \\ > 0.165 & 100 & 93.51\% to 100\% & 91.55 & 82.51\% to 96.84\% & 11.83 \\ > 0.2 & 100 & 93.51\% to 100\% & 97.18 & 90.19\% to 99.66\% & 35.5 \\ > 0.23 & 90.18 & 00.28\% to 99.39\% & 98.57 & 02.44\% to 99.66\% & 35.5 \\ > 0.25 & 90.18 & 00.28\% to 99.39\% & 98.57 & 02.44\% to 99.66\% & 66.71 \\ > 0.245 & 94.55 & 84.88\% to 98.86\% & 100 & 94.94\% to 100\% \\ > 0.25 & 90.91 & 80.05\% to 96.98\% & 100 & 94.94\% to 100\% \\ > 0.25 & 90.91 & 80.05\% to 96.98\% & 100 & 94.94\% to 100\% \\ > 0.25 & 90.91 & 80.05\% to 96.98\% & 100 & 94.94\% to 100\% \\ > 0.25 & 90.91 & 80.05\% to 96.98\% & 100 & 94.94\% to 100\% \\ > 0.3 & 87.27 & 75.52\% to 94.73\% & 100 & 94.94\% to 100\% \\ > 0.35 & 87.18 & 0.73.34\% to 95.35\% & 100 & 94.94\% to 100\% \\ > 0.35 & 74.55 & 61.5\% to 85.37\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 85.86\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 85.38\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.15 & 50.94\% to 85.37\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 85.37\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 85.37\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 85.37\% & 100 & 94.94\% to 100\% \\ > 0.35 & 77.13 & 50.94\% to 77.6\% & 100 & 94.94\% to 100\% \\ > 0.35 & 61.44 & 49.26\% to 77.95\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.44 & 49.26\% to 60.35\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.44 & 49.26\% to 60.35\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.42 & 49.25\% to 63.03\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.42 & 49.25\% to 63.03\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.45 & 51.42\% to 77.76\% & 100 & 94.94\% to 100\% \\ > 0.45 & 61.45 & 41.55\% to 63.03\% & 100 & 94.94\% to 100\% \\ > 0.45 & 51.55 & 21.24\% to 43.53\% & 100 & 94.94\% to 100\% \\ > 0.45 & 51.81 & 90.79\% & 100 & 94.94\% to 100\% \\ > 0.45 & 51.81 & 90.79\% & 100 & 94.94\% to 100\% \\ > 0.45 & 51.81 & 90.79\% & 100 & 94.94\% to 100\% \\ > 0.65 & 22.71 & 10.45\% to 63.03\% & 100 & 94.94\% to 100\% \\ > 0.65 & 22.71 & 10.45\% to 63.03\% & 100 & 94.94\% to 1$ | > 0.135 | 100 | 93 51% to 100% | 70.42 | 58 41% to 80 67% | 3 381 | | | |
| > 0.155 100 93.51% to 100% 80.28 69.14% to 88.78% 5.071 > 0.165 100 93.51% to 100% 84.51 73.97% to 92% 6.455 > 0.18 100 93.51% to 100% 95.77 88.14% to 99.12% 23.67 > 0.22 100 93.51% to 100% 97.78 90.24% to 99.05% 69.57 > 0.235 98.18 99.28% to 99.95% 98.59 92.4% to 99.05% 69.71 > 0.245 96.56 87.47% to 99.56% 98.59 92.4% to 99.06% 69.71 > 0.25 92.73 82.41% to 97.98% 100 94.94% to 100% 94.94% to 100% > 0.235 90.91 80.05% to 96.98% 100 94.94% to 100% 94.94% to 100% > 0.335 78.18 64.99% to 88.7% 100 94.94% to 100% 94.94% to 100% > 0.335 78.18 64.99% to 83.95% 100 94.94% to 100% 94.95% to 75.94% to 83.95% 9 | > 0.145 | 100 | 93.51% to 100% | 76.06 | 64.46% to 85.39% | 4,176 | | | |
| > 0.165 100 93.51% to 100% 84.51 73.97% to 92% 6.455 > 0.18 100 93.51% to 100% 91.55 82.51% to 99.65% 13.81 > 0.22 100 93.51% to 100% 97.18 90.19% to 99.65% 65.71 > 0.23 98.18 90.28% to 99.95% 98.59 92.4% to 99.96% 68.42 > 0.24 94.55 88.48% to 98.86% 100 94.94% to 100% 84.52 > 0.25 90.91 80.05% to 95.95% 100 94.94% to 100% 84.52 > 0.26 94.55 88.48% to 98.86% 100 94.94% to 100% 84.52 > 0.275 92.73 88.41% to 95.5% 100 94.94% to 100% 84.52 > 0.315 87.47 75.25% to 94.73% 100 94.94% to 100% 84.52 > 0.335 78.18 64.99% to 83.5% 100 94.94% to 100% 80.35% > 0.335 71.25 50.94% to 83.5% 100 94.94% to 100% 80.35% > 0.335 71.25 51.9% to 80.86% 10 | > 0 155 | 100 | 93 51% to 100% | 80.28 | 69 14% to 88 78% | 5.071 | | | |
| 0.18 100 $93.51%$ to $100%$ 91.55 $82.51%$ to $96.84%$ 11.33 0.2 100 $93.51%$ to $100%$ 97.71 $88.14%$ to $99.12%$ 23.67 0.22 100 $93.51%$ to $100%$ 97.18 $90.9%$ to $99.0%$ 69.71 0.235 96.18 $90.25%$ to $99.5%$ 98.59 $92.4%$ to $99.0%$ 68.42 0.26 94.55 $84.8%$ to $99.8%$ 100 $94.94%$ to $100%$ 0.275 92.73 $82.11%$ to $97.8%$ 100 $94.94%$ to $100%$ 0.33 87.27 $7.52%$ to 94.75 100 $94.94%$ to $100%$ 0.33 87.27 $7.52%$ to $98.7%$ 100 $94.94%$ to $100%$ 0.355 72.73 $50.04%$ to $83.5%$ 100 $94.94%$ to $100%$ 0.355 72.73 $50.04%$ to $83.80%$ 100 $94.94%$ to $100%$ 0.355 72.73 $50.04%$ to $83.80%$ 100 $94.94%$ to $100%$ 0.355 $51.9%$ to $80.80%$ 100 $94.94%$ to $100%$ | > 0.165 | 100 | 93 51% to 100% | 84 51 | 73 97% to 92% | 6.455 | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.18 | 100 | 93 51% to 100% | 91.55 | 82 51% to 96 84% | 11.83 | | | |
| 0.22 100 $2.51%$ to 100% 92.18 00.1% to 50.12% 100% 05.11% 0.225 98.18 90.25% to 99.55% 98.59 92.4% to 99.96% 60.71 0.245 94.35 84.88% to 99.56% 98.59 92.4% to 99.96% 68.42 0.25 92.73 82.41% to 97.98% 100 94.94% to 100% 94.94% to 100% 0.235 90.91 80.05% to 90.57% 100 94.94% to 100% 94.94% to 100% 0.33 87.27 75.52% to 94.73% 100 94.94% to 100% 94.94% to 100% 0.335 78.18 64.99% to 88.19% 100 94.94% to 100% 94.94% to 100% 0.335 78.18 64.99% to 83.30% 100 94.94% to 100% 94.94% to 100% 0.355 74.73 69.04% to 83.20% 100 94.94% to 100% 94.94% to 100% 0.355 72.73 59.04% to 83.80% 100 94.94% to 100% 94.94% to 100% 0.355 64.55 51.29% to 77.76% 100 94.94% to 100% 94.94% to 100% | > 0.2 | 100 | 93 51% to 100% | 95.77 | 88 14% to 99 12% | 23.67 | | | |
| 0.22 18.8 $92.5%$ 98.59 $92.4%$ $16.99.96%$ 69.71 0.245 96.36 $87.4%$ $10.99.5%$ 98.59 $92.4%$ $10.99.6%$ 68.42 0.25 92.73 $82.41%$ $10.99.6%$ $00.94.4%$ $10.0%$ 0.255 92.73 $82.41%$ $10.99.8%$ 10.0 $94.94%$ $10.0%$ 0.255 92.73 $82.41%$ $10.97.8%$ 10.0 $94.94%$ $10.0%$ 0.33 87.27 $75.5%$ 10.0 $94.94%$ $10.0%$ 0.335 78.18 $64.99%$ $88.19%$ 10.0 $94.94%$ $10.0%$ 0.335 74.55 $61.9%$ $83.3%$ 10.0 $94.94%$ $10.0%$ 0.335 74.57 $50.96%$ $82.3%$ 10.0 $94.94%$ $10.0%$ 0.335 72.73 $59.06%$ $82.3%$ 10.0 $94.94%$ $10.0%$ 0.335 65.45 $51.42%$ 10.77 | > 0.22 | 100 | 93 51% to 100% | 97.18 | 90 19% to 99 66% | 35.5 | | | |
| 0.245 0.245 0.245 0.245 0.245 0.247 0.074 0.265 94.55 $84.48%$ to $99.86%$ 100 $94.94%$ to $100%$ 0.275 92.73 $82.14%$ to $99.86%$ 100 $94.94%$ to $100%$ 0.285 90.91 $80.05%$ to $98.8%$ 100 $94.94%$ to $100%$ 0.33 87.27 $75.52%$ to $94.73%$ 100 $94.94%$ to $100%$ 0.315 85.45 $73.34%$ 000 $94.94%$ to $100%$ 0.335 78.18 $64.09%$ to $85.19%$ 100 $94.94%$ to $100%$ 0.335 78.18 $64.09%$ to $85.39%$ 100 $94.94%$ to $100%$ 0.335 72.73 $59.04%$ to $83.80%$ 100 $94.94%$ to $100%$ 0.355 72.73 $59.04%$ to $82.37%$ 100 $94.94%$ to $100%$ 0.355 72.73 $59.04%$ to $32.5%$ 100 $94.94%$ to $100%$ 0.355 72.73 $59.04%$ to $73.9%$ 100 $94.94%$ to $100%$ 0.355 67.27 $53.29%$ to $73.2%$ 100 $94.94%$ to $100%$ 0.435 64.45 $51.94%$ to $73.9%$ 100 $94.94%$ to $100%$ 0.445 63.24 $49.56%$ to $67.1%$ 100 $94.94%$ to $100%$ 0.445 64.25 $66.7%$ 100 $94.94%$ to $100%$ 0.445 54.55 $40.55%$ to $63.03%$ 100 $94.94%$ to $100%$ 0.445 $49.69%$ to $51.9%%$ 100 $94.94%$ to $100%$ 0.445 49.09 $54.95%$ 100 94.94 | > 0.225 | 98.18 | 90 28% to 99 95% | 98 59 | 92.4% to 99.96% | 69 71 | | | |
| -0.25 0.33 0.1710 0.02 0.042 -0.25 94.35 84.88 $0.98.86%$ 100 $94.94%$ to $100%$ -0.285 90.91 $80.05%$ to $96.98%$ 100 $94.94%$ to $100%$ -0.315 85.45 $77.52%$ to $94.73%$ 100 $94.94%$ to $100%$ -0.315 85.45 $77.52%$ to $94.73%$ 100 $94.94%$ to $100%$ -0.325 80 $67.03%$ to $89.57%$ 100 $94.94%$ to $100%$ -0.335 78.18 $64.99%$ to $88.19%$ 100 $94.94%$ to $100%$ -0.335 $71.52%$ to $88.19%$ 100 $94.94%$ to $100%$ -0.355 72.13 $82.37%$ 100 $94.94%$ to $100%$ -0.355 72.73 $89.86%$ 100 $94.94%$ to $100%$ -0.355 72.73 $89.23%$ 100 $94.94%$ to $100%$ -0.385 67.27 $53.29%$ to $79.32%$ 100 $94.94%$ to $100%$ -0.415 61.82 $47.39%$ to $77.5%$ 100 $94.94%$ to $100%$ -0.445 56.36 $42.32%$ to $67.7%$ 100 $94.94%$ to $100%$ -0.445 56.36 $42.32%$ to $67.7%$ 100 $94.94%$ to $100%$ -0.445 56.36 $42.32%$ to $67.9%$ 100 $94.94%$ to $100%$ -0.445 49.09 $35.35%$ to $62.93%$ 100 $94.94%$ to $100%$ -0.445 49.09 $35.35%$ to $62.93%$ 100 $94.94%$ to $100%$ -0.455 38.18 $25.27%$ 100 $94.94%$ to $100%$ <td>> 0.245</td> <td>96.36</td> <td>87.47% to 99.56%</td> <td>98.59</td> <td>92.4% to 99.96%</td> <td>68.42</td> | > 0.245 | 96.36 | 87.47% to 99.56% | 98.59 | 92.4% to 99.96% | 68.42 | | | |
| 0.255 92.73 82.4185 100 $94.94%$ $100%$ > 0.22590.9180.05% to 96.98%10094.94% to 100%> 0.387.2775.52% to 94.73%10094.94% to 100%> 0.3187.4775.52% to 95.75%10094.94% to 100%> 0.3258067.03% to 89.57%10094.94% to 100%> 0.33578.1864.99% to 88.19%10094.94% to 100%> 0.33574.5561% to 85.35%10094.94% to 100%> 0.35572.7359.04% to 83.86%10094.94% to 100%> 0.35572.7359.04% to 83.86%10094.94% to 100%> 0.35572.7359.04% to 82.37%10094.94% to 100%> 0.35567.2753.29% to 79.32%10094.94% to 100%> 0.38567.2753.29% to 79.32%10094.94% to 100%> 0.40563.6449.65% to 75.19%10094.94% to 100%> 0.41561.8247.73% to 74.59%10094.94% to 100%> 0.44556.3642.32% to 69.7%10094.94% to 100%> 0.45554.3540.55% to 68.03%10094.94% to 100%> 0.45554.3540.55% to 68.03%10094.94% to 100%> 0.45534.5512.24% to 54.58%1 | > 0.245 | 90.50 | 81.88% to 08.86% | 100 | 94.94% to 100% | 00.42 | | | |
| > 0.235 29.23 $80.0%$ to $95.9%$ 100 $94.94%$ to $100%$ > 0.33 87.27 $75.52%$ to $94.73%$ 100 $94.94%$ to $100%$ > 0.315 85.45 $73.34%$ to $93.5%$ 100 $94.94%$ to $100%$ > 0.325 80 $67.03%$ to $89.57%$ 100 $94.94%$ to $100%$ > 0.335 78.18 $64.99%$ to $88.19%$ 100 $94.94%$ to $100%$ > 0.335 78.18 $64.99%$ to $88.36%$ 100 $94.94%$ to $100%$ > 0.335 72.73 $90.4%$ to $83.86%$ 100 $94.94%$ to $100%$ > 0.335 72.73 $50.4%$ to $83.86%$ 100 $94.94%$ to $100%$ > 0.335 67.27 $52.9%$ 100 $94.94%$ to $100%$ > 0.335 67.27 $52.9%$ to $79.32%$ 100 $94.94%$ to $100%$ > 0.335 67.27 $52.9%$ to $77.6%$ 100 $94.94%$ to $100%$ > 0.405 63.64 $49.5%$ to $71.76%$ 100 $94.94%$ to $100%$ > 0.415 66.36 $42.32%$ to $77.6%$ 100 $94.94%$ to $100%$ > 0.445 56.36 $42.32%$ to $67.7%$ 100 $94.94%$ to $100%$ > 0.445 56.36 $42.32%$ to $66.35%$ 100 $94.94%$ to $100%$ > 0.445 54.55 $45.5%$ to $62.3%$ 100 $94.94%$ to $100%$ > 0.445 54.55 $42.5%$ to $62.3%$ 100 $94.94%$ to $100%$ > 0.455 $45.5%$ to $62.3%$ 100 $94.94%$ to $100%$ > 0.455 $45.5%$ to $12.2%$ 100 $94.94%$ to $100%$ <td>> 0.20</td> <td>94.55</td> <td>87.41% to 97.08%</td> <td>100</td> <td>94.94% to 100%</td> <td></td> | > 0.20 | 94.55 | 87.41% to 97.08% | 100 | 94.94% to 100% | | | | |
| > 0.3 30.51 $30.50.6$ $30.60.6$ $30.50.6$ $30.60.6$ $30.50.6$ $30.60.6$ $30.50.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.50.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ $30.60.6$ <th< td=""><td>> 0.275</td><td>92.73</td><td>82.4170 to 97.9870</td><td>100</td><td>94.94% to 100%</td><td></td></th<> | > 0.275 | 92.73 | 82.4170 to 97.9870 | 100 | 94.94% to 100% | | | | |
| ~ 0.31 $0.52.4$ is $0.94.7$ is 100 $9.4.94\%$ is 100% > 0.315 85.457.3.44\% is $0.9.57\%$ 100 94.94% is 100% > 0.325 8067.03\% is $0.9.57\%$ 100 94.94% is 100% > 0.335 78.1864.99\% is $0.85.13\%$ 100 94.94% is 100% > 0.335 72.73 59.04% is 85.33% 100 94.94% is 100% > 0.355 72.73 59.04% is 85.33% 100 94.94% is 100% > 0.355 70.91 57.1% is 82.37% 100 94.94% is 100% > 0.355 67.27 51.9% is 80.86% 100 94.94% is 100% > 0.355 65.45 51.42% is 77.76% 100 94.94% is 100% > 0.405 63.64 49.56% to 76.19% 100 94.94% to 100% > 0.415 61.82 47.73% 100 94.94% to 100% > 0.445 65.36 42.32% to 67.7% 100 94.94% to 100% > 0.445 56.36 42.32% to 66.33% 100 94.94% to 100% > 0.445 56.36 42.32% to 66.33% 100 94.94% to 100% > 0.445 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.455 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.455 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.455 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.555 30.91 10.4% to 49.6% | > 0.285 | 90.91 | 75 52% to 04 73% | 100 | 94.94% to 100% | | | | |
| 2 + 0.313 3.545 1.545 100 9.49478 to 10076 $2 + 0.325$ 80 67.0356 1000 94.9478 to 10076 $2 + 0.335$ 78.18 64.9978 to 88.1976 100 94.9478 to 10076 $2 + 0.345$ 74.55 6176 to 83.3576 100 94.9478 to 10076 $2 + 0.345$ 74.55 6176 to 83.3576 100 94.9478 to 10076 $2 + 0.3575$ 69.09 55.1976 to 82.3776 100 94.9478 to 10076 $2 + 0.355$ 67.27 53.2976 to 79.3276 100 94.9478 to 10076 $2 + 0.355$ 65.45 51.4276 to 77.7676 100 94.9478 to 10076 $2 + 0.405$ 63.64 49.5676 to 77.6766 100 94.9478 to 10076 $2 + 0.415$ 61.82 47.73766 100 94.9478 to 10076 $2 - 0.415$ 61.82 47.73786 100 94.94786 to 10076 $2 - 0.445$ 56.36 42.3276 to 69.776 100 94.94786 to 10076 $2 - 0.445$ 56.36 42.32766 to 62.9376 100 94.94786 to 10076 $2 - 0.445$ 54.55 40.5526 100 94.94786 to 10076 $2 - 0.445$ 49.09 35.3576 to 62.9376 100 94.94786 to 10076 $2 - 0.445$ 47.27 33.65786 to 62.9376 100 94.94786 to 10076 $2 - 0.55$ 40 2.72476 to 54.0976 100 94.94786 to 10076 $2 - 0.55$ 30.91 91.47876 to 54.0976 100 </td <td>> 0.3</td> <td>07.27</td> <td>73.3270 t0 94.7370</td> <td>100</td> <td>94.94% to 100%</td> <td></td> | > 0.3 | 07.27 | 73.3270 t0 94.7370 | 100 | 94.94% to 100% | | | | |
| $2 0.323$ 30 $0.105 \times 10 \times 52.7\%$ 100 $9.494\% to 100\%$ > 0.33578.1864.99\% to 88.19\%10094.94% to 100\%> 0.34574.5561% to 85.33%10094.94% to 100%> 0.35572.7359.04% to 83.36%10094.94% to 100%> 0.36570.9157.1% to 82.37%10094.94% to 100%> 0.35567.2753.29% to 79.32%10094.94% to 100%> 0.38567.2753.29% to 79.32%10094.94% to 100%> 0.41561.8247.73% to 74.59%10094.94% to 100%> 0.41561.8247.73% to 74.59%10094.94% to 100%> 0.436045.91% to 72.98%10094.94% to 100%> 0.44556.3642.32% to 66.35%10094.94% to 100%> 0.44554.5540.55% to 66.35%10094.94% to 100%> 0.44549.0935.35% to 66.35%10094.94% to 100%> 0.44549.0935.35% to 62.93%10094.94% to 100%> 0.45544.55% to 51.46%10094.94% to 100%> 0.45538.1825.41% to 52.27%10094.94% to 100%> 0.55530.9119.14% to 44.81%10094.94% to 100%> 0.55530.9119.14% to 44.81%10094.94% to 100%> 0.55530.9119.14% to 35.01%10094.94% to 100%> 0.61521.8211.81% to 35.01%10094.94% to 100%> 0.65716.367.766% to 28.8%100 | > 0.315 | 80.43 | 73.3470 to 93.370 | 100 | 94.94% to 100% | | | | |
| 2 + 0.333 $7.4.16$ $0.9.597$ No 86.12% 100 $94.94%$ to $100%$ $2 + 0.355$ 72.73 $59.04%$ to $83.86%$ 100 $94.94%$ to $100%$ $2 + 0.355$ 72.73 $59.04%$ to $83.86%$ 100 $94.94%$ to $100%$ $2 + 0.355$ 72.73 $59.04%$ to $83.86%$ 100 $94.94%$ to $100%$ $2 + 0.355$ 67.27 $55.29%$ to $79.32%$ 100 $94.94%$ to $100%$ $2 + 0.355$ 67.27 $55.29%$ to $79.32%$ 100 $94.94%$ to $100%$ $2 + 0.405$ 63.64 $49.56%$ to $76.19%$ 100 $94.94%$ to $100%$ $2 - 0.405$ 63.64 $49.56%$ to $76.19%$ 100 $94.94%$ to $100%$ $2 - 0.415$ 61.82 $47.73%$ to $74.59%$ 100 $94.94%$ to $100%$ $2 - 0.445$ 56.36 $42.32%$ to $69.7%$ 100 $94.94%$ to $100%$ $2 - 0.445$ 56.36 $42.32%$ to $69.7%$ 100 $94.94%$ to $100%$ $2 - 0.445$ 56.36 $42.32%$ to $68.05%$ 100 $94.94%$ to $100%$ $2 - 0.445$ 56.36 $42.32%$ to $68.05%$ 100 $94.94%$ to $100%$ $2 - 0.485$ 49.09 $35.35%$ to $66.23%$ 100 $94.94%$ to $100%$ $2 - 0.485$ 49.09 $35.35%$ to $61.2%$ 100 $94.94%$ to $100%$ $2 - 0.485$ 49.09 $35.35%$ to $61.2%$ 100 $94.94%$ to $100%$ $2 - 0.485$ 49.09 $35.35%$ to $61.2%$ 100 $94.94%$ to $100%$ $2 - 0.55$ 34.55 $22.27%$ 100 $94.94%$ to | > 0.325 | 70 10 | 64 00% to 89.37% | 100 | 94.94% to 100% | | | | |
| 2 + 0.353 10.3 10.3336 100 $94.34%$ to $100%$ > 0.35572.7359.04% to 83.86%10094.94% to $100%$ > 0.36570.9157.1% to 82.37%10094.94% to $100%$ > 0.38567.2753.29% to 79.32%10094.94% to $100%$ > 0.38565.4551.42% to 77.76%10094.94% to $100%$ > 0.40563.6449.56% to 76.19%10094.94% to $100%$ > 0.41561.8247.73% to 74.59%10094.94% to $100%$ > 0.436045.91% to 72.98%10094.94% to $100%$ > 0.44556.3642.32% to $69.7%$ 10094.94% to $100%$ > 0.44556.3642.32% to $69.7%$ 10094.94% to $100%$ > 0.44556.3642.32% to $69.7%$ 10094.94% to $100%$ > 0.44556.3642.32% to $68.3%$ 10094.94% to $100%$ > 0.44556.3642.32% to $68.3%$ 10094.94% to $100%$ > 0.44547.2733.65% to $61.2%$ 10094.94% to $100%$ > 0.48549.0935.35% to $64.37%$ 10094.94% to $100%$ > 0.5054027.02% to 54.09%10094.94% to $100%$ > 0.51538.1825.41% to 52.27%10094.94% to $100%$ > 0.55530.9119.14% to 48.85%10094.94% to $100%$ > 0.55530.9119.14% to 42.9%10094.94% to $100%$ > 0.55530.9119.14% to 42.9%10094.94% to $100%$ > 0.665 </td <td>> 0.335</td> <td>74.18</td> <td>619/ to 85.19%</td> <td>100</td> <td>94.94% to 100%</td> <td></td> | > 0.335 | 74.18 | 619/ to 85.19% | 100 | 94.94% to 100% | | | | |
| $2 \cdot 0.353$ 72.73 53.04% to 83.05% 100 94.94% to 100% $2 \cdot 0.375$ 69.09 55.19% to 80.86% 100 94.94% to 100% $2 \cdot 0.375$ 69.09 55.19% to 80.86% 100 94.94% to 100% $2 \cdot 0.385$ 67.27 53.29% to 79.32% 100 94.94% to 100% $2 \cdot 0.395$ 65.45 51.42% to 77.76% 100 94.94% to 100% $2 \cdot 0.45$ 61.82 47.73% to 74.59% 100 94.94% to 100% $2 \cdot 0.415$ 61.82 47.73% to 74.59% 100 94.94% to 100% $2 \cdot 0.445$ 56.36 42.32% to 69.7% 100 94.94% to 100% $2 \cdot 0.445$ 56.36 42.32% to 69.7% 100 94.94% to 100% $2 \cdot 0.445$ 56.36 42.32% to 68.03% 100 94.94% to 100% $2 \cdot 0.445$ 56.36 42.32% to 66.33% 100 94.94% to 100% $2 \cdot 0.445$ 47.27 33.65% to 66.23% 100 94.94% to 100% $2 \cdot 0.485$ 49.09 35.35% to 62.93% 100 94.94% to 100% $2 \cdot 0.485$ 49.09 35.35% to 62.93% 100 94.94% to 100% $2 \cdot 0.55$ 34.18 25.17% 100 94.94% to 100% $2 \cdot 0.55$ 30.91 19.14% to 48.1% 100% $2 \cdot 0.55$ 30.91 19.4% 100 94.94% to 100% $2 \cdot 0.55$ 30.91 19.4% 100 94.94% to 100% $2 \cdot 0.55$ 27.27 | > 0.345 | 74.33 | 50 049/ to 82 869/ | 100 | 94.94% to 100% | | | | |
| ~ 0.303 0.31 $0.31.14 \mbox{ b} 0.237.6$ 100 $94.94\% \mbox{ b} 100\%$ > 0.385 67.27 $53.29\% \mbox{ b} 0.86\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.395 65.45 $51.42\% \mbox{ b} 77.76\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.405 63.64 $49.56\% \mbox{ b} 77.76\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.415 61.82 $47.73\% \mbox{ b} 77.59\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.43 60 $45.91\% \mbox{ b} 72.98\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 56.36 $42.32\% \mbox{ b} 69.7\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 56.36 $42.32\% \mbox{ b} 69.7\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 56.36 $42.32\% \mbox{ b} 69.7\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 56.36 $42.32\% \mbox{ b} 69.7\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 56.36 $42.32\% \mbox{ b} 69.7\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.445 49.09 $35.35\% \mbox{ b} 62.93\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.485 49.09 $35.35\% \mbox{ b} 62.93\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.485 49.09 $35.35\% \mbox{ b} 62.93\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.555 30.91 $19.44\% \mbox{ b} 4.8\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.555 30.91 $19.14\% \mbox{ b} 4.8\%$ 100 $94.94\% \mbox{ b} 100\%$ > 0.575 29.09 $17.63\% \mbox{ b} 4.95\%$ 100 </td <td>> 0.355</td> <td>72.73</td> <td>57 19/ to 83.80%</td> <td>100</td> <td>94.94% to 100%</td> <td></td> | > 0.355 | 72.73 | 57 19/ to 83.80% | 100 | 94.94% to 100% | | | | |
| > 0.375 650.9 53.19^{+} to 80.08^{+} 100 94.94^{+} to 100^{+} > 0.385 67.27 53.29^{+} to 73.23^{+} 100 94.94^{+} to 100^{+} > 0.405 63.64 49.56^{+} to 77.76^{+} 100 94.94^{+} to 100^{+} > 0.415 61.82 47.73^{+} to 77.59^{+} 100 94.94^{+} to 100^{+} > 0.43 60 45.91^{+} to 72.98^{+} 100 94.94^{+} to 100^{+} > 0.445 56.36 42.22^{+} to 67.9^{+} 100 94.94^{+} to 100^{+} > 0.445 56.36 42.22^{+} to 68.03^{+} 100 94.94^{+} to 100^{+} > 0.445 54.55 40.55^{+} to 68.03^{+} 100 94.94^{+} to 100^{+} > 0.47 52.73 38.8^{+} to 66.35^{+} 100 94.94^{+} to 100^{+} > 0.485 49.09 35.35^{+} to 62.93^{+} 100 94.94^{+} to 100^{+} > 0.485 49.09 35.35^{+} to 62.93^{+} 100 94.94^{+} to 100^{+} > 0.485 49.09 35.35^{+} to 62.93^{+} 100 94.94^{+} to 100^{+} > 0.505 40 27.02^{+} to 54.09^{+} 100 94.94^{+} to 100^{+} > 0.555 30.91 19.14^{+} to 52.27^{+} 100 94.94^{+} to 100^{+} > 0.555 30.91 19.14^{+} to 42.99^{+} 100 94.94^{+} to 100^{+} > 0.575 29.09 17.63^{+} to 42.99^{+} 100 94.94^{+} to 100^{+} > 0.605 27.27 16.1 | > 0.363 | /0.91 | 57.1% 10 82.57% | 100 | 94.94% to 100% | | | | |
| > 0.385 0.127 33.29×0 100 94.94% to 100% > 0.395 65.45 51.42% to 77.76% 100 94.94% to 100% > 0.405 65.64 49.56% to 76.19% 100 94.94% to 100% > 0.415 61.82 47.73% to 74.59% 100 94.94% to 100% > 0.43 60 45.91% to 72.98% 100 94.94% to 100% > 0.445 56.36 42.32% to 69.7% 100 94.94% to 100% > 0.445 56.35 40.55% to 68.03% 100 94.94% to 100% > 0.445 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.47 52.73 38.8% to 66.35% 100 94.94% to 100% > 0.485 49.09 35.35% to 62.93% 100 94.94% to 100% > 0.475 47.27 33.65% to 61.2% 100 94.94% to 100% > 0.505 40 27.02% to 54.09% 100 94.94% to 100% > 0.555 30.91 19.14% to 54.2% 100 94.94% to 100% > 0.575 29.09 17.63% to 42.9% 100 94.94% to 100% > 0.595 27.27 16.14% to 40.96% 100 94.94% to 100% > 0.665 18.18 90.79% to 30.9% 100 94.94% to 100% > 0.675 16.36 7.76% to 28.8% 100 94.94% to 100% > 0.675 16.36 7.76% to 28.8% 100 94.94% to 100% > 0.6645 $18.$ | > 0.375 | 69.09 | 53.19% to 70.22% | 100 | 94.94% to 100% | | | | |
| ~ 0.353 $0.3+3$ $11.42,40$ 11.00 $94.94,46$ 1000^{36} ≥ 0.405 63.64 49.56% to 76.19% 100 94.94% to 100% ≥ 0.415 61.82 47.73% to 74.59% 100 94.94% to 100% ≥ 0.433 60 45.91% to 72.98% 100 94.94% to 100% ≥ 0.445 56.36 42.32% to 69.7% 100 94.94% to 100% ≥ 0.445 56.36 42.32% to 68.03% 100 94.94% to 100% ≥ 0.455 54.55 40.55% to 68.03% 100 94.94% to 100% ≥ 0.485 49.09 35.35% to 62.93% 100 94.94% to 100% ≥ 0.485 49.09 35.35% to 61.2% 100 94.94% to 100% ≥ 0.495 47.27 33.65% to 51.2% 100 94.94% to 100% ≥ 0.505 40 27.02% to 54.09% 100 94.94% to 100% ≥ 0.515 38.18 25.41% to 52.27% 100 94.94% to 100% ≥ 0.555 30.91 19.14% to 42.9% 100 94.94% to 100% ≥ 0.555 30.91 19.14% to 44.81% 100 94.94% to 100% ≥ 0.595 27.27 16.14% to 44.81% 100 94.94% to 100% ≥ 0.605 25.45 14.67% to 39% 100 94.94% to 100% ≥ 0.615 21.82 11.81% to 30.9% 100 94.94% to 100% ≥ 0.605 25.45 14.67% to 28.8% 100 94.94% to 100% ≥ 0.6 | > 0.385 | 65.45 | 51.429% to 77.76% | 100 | 94.94% to 100% | | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.395 | 62.64 | 40.560/ to 77.10% | 100 | 94.94% to 100% | | | | |
| > 0.413 $0.1.82$ $4.7.39$ 100 $94.94%$ to $100%$ > 0.43 60 $45.91%$ to $72.98%$ 100 $94.94%$ to $100%$ > 0.445 56.36 $42.23%$ to $69.7%$ 100 $94.94%$ to $100%$ > 0.445 56.36 $42.23%$ to $69.7%$ 100 $94.94%$ to $100%$ > 0.445 54.55 $40.55%$ to $68.03%$ 100 $94.94%$ to $100%$ > 0.47 52.73 $38.8%$ to $66.35%$ 100 $94.94%$ to $100%$ > 0.485 49.09 $35.35%$ to $62.93%$ 100 $94.94%$ to $100%$ > 0.495 47.27 $33.65%$ to $61.2%$ 100 $94.94%$ to $100%$ > 0.505 40 $27.02%$ to $54.09%$ 100 $94.94%$ to $100%$ > 0.555 34.55 $22.24%$ to $48.58%$ 100 $94.94%$ to $100%$ > 0.555 30.91 $19.14%$ to $44.81%$ 100 $94.94%$ to $100%$ > 0.555 30.91 $19.14%$ to $44.81%$ 100 $94.94%$ to $100%$ > 0.555 27.27 $16.14%$ to $40.96%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.615 21.82 $11.81%$ to $35.01%$ 100 $94.94%$ to $100%$ > 0.675 16.36 $7.766%$ to $28.8%$ 100 $94.94%$ to $100%$ > 0.675 16.36 $7.766%$ to $28.8%$ 100 $94.94%$ to $100%$ > 0.675 $10.31%$ to $22.25%$ 100 $94.94%$ to $100%$ > 0.75 10.91 $4.11%$ | > 0.405 | 61.82 | 49.30% to 70.19% | 100 | 94.94% to 100% | | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.413 | 60 | 47.73% to 74.39% | 100 | 94.94% to 100% | | | | |
| > 0.443 30.30 $42.32.8 \ 1007 / \%$ 100 $94.94\% \ 100\%$ > 0.455 54.55 $40.55\% \ to 68.03\%$ 100 $94.94\% \ to 100\%$ > 0.454 52.73 $38.8\% \ to 66.35\%$ 100 $94.94\% \ to 100\%$ > 0.485 49.09 $35.35\% \ to 62.93\%$ 100 $94.94\% \ to 100\%$ > 0.495 47.27 $33.65\% \ to 61.2\%$ 100 $94.94\% \ to 100\%$ > 0.505 40 $27.02\% \ to 54.09\%$ 100 $94.94\% \ to 100\%$ > 0.515 38.18 $25.41\% \ to 52.27\%$ 100 $94.94\% \ to 100\%$ > 0.525 34.55 $22.24\% \ to 48.58\%$ 100 $94.94\% \ to 100\%$ > 0.54 32.73 $20.68\% \ to 46.71\%$ 100 $94.94\% \ to 100\%$ > 0.54 32.73 $20.68\% \ to 46.71\%$ 100 $94.94\% \ to 100\%$ > 0.555 30.91 $19.14\% \ to 44.81\%$ 100 $94.94\% \ to 100\%$ > 0.575 29.09 $17.63\% \ to 42.9\%$ 100 $94.94\% \ to 100\%$ > 0.595 27.27 $16.14\% \ to 40.96\%$ 100 $94.94\% \ to 100\%$ > 0.605 25.45 $14.67\% \ to 39\%$ 100 $94.94\% \ to 100\%$ > 0.645 18.18 $9.079\% \ to 30.9\%$ 100 $94.94\% \ to 100\%$ > 0.675 16.36 $7.66\% \ to 28.8\%$ 100 $94.94\% \ to 100\%$ > 0.69 14.55 $6.495\% \ to 26.66\%$ 100 $94.94\% \ to 100\%$ > 0.72 12.73 $5.274\% \ to 24.48\%$ 100 $94.94\% \ to 100\%$ > 0.75 < | > 0.45 | 56.26 | 43.9170 to 72.9870 | 100 | 94.94% to 100% | | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | > 0.445 | 54.55 | 42.32% to 68.03% | 100 | 94.94% to 100% | | | | |
| > 0.47 32.73 $33.83.600.00.37.6$ 100 $94.94% to 100%$ > 0.485 49.09 $35.35%$ to $62.93%$ 100 $94.94%$ to $100%$ > 0.495 47.27 $33.65%$ to $61.2%$ 100 $94.94%$ to $100%$ > 0.505 40 $27.02%$ to $54.09%$ 100 $94.94%$ to $100%$ > 0.515 38.18 $25.41%$ to $52.27%$ 100 $94.94%$ to $100%$ > 0.525 34.55 $22.24%$ to $48.58%$ 100 $94.94%$ to $100%$ > 0.54 32.73 $20.68%$ to $46.71%$ 100 $94.94%$ to $100%$ > 0.54 32.73 $20.68%$ to $46.71%$ 100 $94.94%$ to $100%$ > 0.555 30.91 $19.14%$ to $44.81%$ 100 $94.94%$ to $100%$ > 0.575 29.09 $17.63%$ to $42.9%$ 100 $94.94%$ to $100%$ > 0.595 27.27 $16.14%$ to $40.96%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.615 21.82 $11.81%$ to $35.01%$ 100 $94.94%$ to $100%$ > 0.645 18.18 $9.079%$ to $30.9%$ 100 $94.94%$ to $100%$ > 0.69 14.55 $6.495%$ to $26.66%$ 100 $94.94%$ to $100%$ > 0.72 12.73 $5.274%$ 100 $94.94%$ to $100%$ > 0.75 10.91 $4.11%$ to $22.25%$ 100 $94.94%$ to $100%$ > 0.75 9.091 | > 0.433 | 52 73 | 40.3370 to 66.35% | 100 | 94.94% to 100% | | | | |
| > 0.485 43.09 $33.33 \times 10 \ 0.2.93 \times 10$ 100 $94.34 \times 100 \times$ | > 0.47 | 40.00 | 25 25% to 62 02% | 100 | 94.94% to 100% | | | | |
| > 0.495 47.27 $33.05.76$ to $54.09%$ 100 $94.94%$ to $100%$ > 0.505 40 $27.02%$ to $54.09%$ 100 $94.94%$ to $100%$ > 0.515 38.18 $25.41%$ to $52.27%$ 100 $94.94%$ to $100%$ > 0.525 34.55 $22.24%$ to $48.58%$ 100 $94.94%$ to $100%$ > 0.54 32.73 $20.68%$ to $46.71%$ 100 $94.94%$ to $100%$ > 0.555 30.91 $19.14%$ to $44.81%$ 100 $94.94%$ to $100%$ > 0.575 29.09 $17.63%$ to $42.9%$ 100 $94.94%$ to $100%$ > 0.595 27.27 $16.14%$ to $40.96%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.615 21.82 $11.81%$ to $35.01%$ 100 $94.94%$ to $100%$ > 0.645 18.18 $9.079%$ to $30.9%$ 100 $94.94%$ to $100%$ > 0.675 16.36 $7.766%$ to $28.8%$ 100 $94.94%$ to $100%$ > 0.69 14.55 $6.495%$ to $26.66%$ 100 $94.94%$ to $100%$ > 0.75 10.91 $4.11%$ to $22.25%$ 100 $94.94%$ to $100%$ > 0.755 9.091 $3.018%$ to $19.95%$ 100 $94.94%$ to $100%$ > 0.755 9.091 $3.018%$ to $19.95%$ 100 $94.94%$ to $100%$ > 0.755 9.091 $3.018%$ to $19.95%$ 100 $94.94%$ to $100%$ > 0.755 | > 0.485 | 49.09 | 33.55% to 61.2% | 100 | 94.94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.505 | 47.27 | 27.02% to 54.00% | 100 | 94.94% to 100% | | | | |
| > 0.51530.1625.4176 to $52.27/6$ 10094.94% to 100% > 0.52534.5522.24% to 48.58% 10094.94% to 100% > 0.5432.7320.68% to 46.71% 10094.94% to 100% > 0.55530.9119.14% to 44.81% 10094.94% to 100% > 0.57529.0917.63% to 42.9% 10094.94% to 100% > 0.59527.2716.14% to 40.96% 10094.94% to 100% > 0.60525.4514.67% to 39% 10094.94% to 100% > 0.61521.8211.81% to 35.01% 10094.94% to 100% > 0.64518.189.079% to 30.9% 10094.94% to 100% > 0.67516.367.766% to 28.8% 10094.94% to 100% > 0.6914.556.495% to 26.66% 10094.94% to 100% > 0.7212.735.274% to 24.48% 10094.94% to 100% > 0.7510.914.11% to 22.25% 10094.94% to 100% > 0.7659.0913.018% to 19.95% 10094.94% to 100% > 0.7857.2732.017% to 17.59% 10094.94% to 100% > 0.8055.4551.139% to 15.12% 10094.94% to 100% | > 0.505 | 38.18 | 27.02% to 54.09% | 100 | 94.94% to 100% | | | | |
| > 0.323 34.33 $22.24.78$ to 43.35 100 94.34% to 100% > 0.54 32.73 20.68% to 46.71% 100 94.94% to 100% > 0.555 30.91 19.14% to 44.81% 100 94.94% to 100% > 0.575 29.09 17.63% to 42.9% 100 94.94% to 100% > 0.595 27.27 16.14% to 40.96% 100 94.94% to 100% > 0.605 25.45 14.67% to 39% 100 94.94% to 100% > 0.615 21.82 11.81% to 35.01% 100 94.94% to 100% > 0.645 18.18 9.079% to 30.9% 100 94.94% to 100% > 0.645 18.18 9.079% to 30.9% 100 94.94% to 100% > 0.675 16.36 7.766% to 28.8% 100 94.94% to 100% > 0.69 14.55 6.495% to 26.66% 100 94.94% to 100% > 0.72 12.73 5.274% to 24.48% 100 94.94% to 100% > 0.75 10.91 4.11% to 22.25% 100 94.94% to 100% > 0.75 9.091 3.018% to 19.95% 100 94.94% to 100% > 0.75 7.273 2.017% to 17.59% 100 94.94% to 100% > 0.805 5.455 1.139% to 15.12% 100 94.94% to 100% > 0.808 1.818 0.060% to 9.719% 100 94.94% to 100% | > 0.525 | 24.55 | 22.41% to 48 58% | 100 | 94.94% to 100% | | | | |
| > 0.54 32.73 20.0876 to $40.11%$ 100 $94.94%$ to $100%$ > 0.555 30.91 $19.14%$ to $44.81%$ 100 $94.94%$ to $100%$ > 0.575 29.09 $17.63%$ to $42.9%$ 100 $94.94%$ to $100%$ > 0.595 27.27 $16.14%$ to $40.96%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.605 25.45 $14.67%$ to $39%$ 100 $94.94%$ to $100%$ > 0.615 21.82 $11.81%$ to $35.01%$ 100 $94.94%$ to $100%$ > 0.645 18.18 $9.079%$ to $30.9%$ 100 $94.94%$ to $100%$ > 0.675 16.36 $7.766%$ to $28.8%$ 100 $94.94%$ to $100%$ > 0.69 14.55 $6.495%$ to $26.66%$ 100 $94.94%$ to $100%$ > 0.72 12.73 $5.274%$ to $24.48%$ 100 $94.94%$ to $100%$ > 0.75 10.91 $4.11%$ to $22.25%$ 100 $94.94%$ to $100%$ > 0.755 9.091 $3.018%$ to $19.95%$ 100 $94.94%$ to $100%$ > 0.755 7.273 $2.017%$ to $17.59%$ 100 $94.94%$ to $100%$ > 0.805 5.455 $1.139%$ to $15.12%$ 100 $94.94%$ to $100%$ > 0.88 1.818 $0.060%$ to $9.719%$ 100 $94.94%$ to $100%$ | > 0.525 | 34.55 | 22.2470 to 46.3870 | 100 | 94.94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.555 | 30.91 | 19 14% to 44 81% | 100 | 94 94% to 100% | | | | |
| > 0.57527.2716.14% to 40.96%10094.94% to 100%> 0.60525.4514.67% to 39%10094.94% to 100%> 0.61521.8211.81% to 35.01%10094.94% to 100%> 0.64518.189.079% to 30.9%10094.94% to 100%> 0.64518.189.079% to 30.9%10094.94% to 100%> 0.67516.367.766% to 28.8%10094.94% to 100%> 0.6914.556.495% to 26.66%10094.94% to 100%> 0.7212.735.274% to 24.48%10094.94% to 100%> 0.7510.914.11% to 22.25%10094.94% to 100%> 0.7659.0913.018% to 19.95%10094.94% to 100%> 0.7857.2732.017% to 17.59%10094.94% to 100%> 0.8055.4551.139% to 15.12%10094.94% to 100%> 0.881.8180.060% to 9.719%10094.94% to 100% | > 0.555 | 29.09 | 17.63% to 42.9% | 100 | 94 94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.595 | 27.07 | 16 14% to 40 96% | 100 | 94 94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.605 | 25.45 | 14 67% to 39% | 100 | 94 94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.615 | 21.82 | 11.81% to 35.01% | 100 | 94 94% to 100% | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | > 0.645 | 18 18 | 9 079% to 30 9% | 100 | 94 94% to 100% | | | | |
| > 0.6914.556.495% to 26.66%10094.94% to 100% > 0.72 12.735.274% to 24.48%10094.94% to 100% > 0.75 10.914.11% to 22.25%10094.94% to 100% > 0.765 9.0913.018% to 19.95%10094.94% to 100% > 0.785 7.2732.017% to 17.59%10094.94% to 100% > 0.805 5.4551.139% to 15.12%10094.94% to 100% > 0.88 1.8180.060% to 9.71%10094.94% to 100% | > 0.675 | 16 36 | 7 766% to 28 8% | 100 | 94 94% to 100% | | | | |
| > 0.72 12.73 5.274% to 24.48% 100 94.94% to 100% > 0.75 10.91 4.11% to 22.25% 100 94.94% to 100% > 0.765 9.091 3.018% to 19.95% 100 94.94% to 100% > 0.785 7.273 2.017% to 17.59% 100 94.94% to 100% > 0.805 5.455 1.139% to 15.12% 100 94.94% to 100% > 0.808 1.818 0.060% to 9.719% 100 94.94% to 100% | > 0.69 | 14 55 | 6 495% to 26.6% | 100 | 94 94% to 100% | | | | |
| > 0.72 12.73 3.27476 to 24.4576 100 94.9476 to 10076 > 0.75 10.91 4.11% to 22.25% 100 94.94% to 10076 > 0.765 9.091 3.018% to 19.95% 100 94.94% to 100% > 0.785 7.273 2.017% to 17.59% 100 94.94% to 100% > 0.805 5.455 1.139% to 15.12% 100 94.94% to 100% > 0.88 1.818 0.040% to 9.719% 100 94.94% to 100% | > 0.07 | 12.72 | 5 274% to 24.00% | 100 | 94 94% to 100% | | | | |
| > 0.765 9.091 3.018% to 19.95% 100 94.94% to 100% > 0.785 7.273 2.017% to 17.59% 100 94.94% to 100% > 0.805 5.455 1.139% to 15.12% 100 94.94% to 100% > 0.88 1.818 0.040% to 9719% 100 94.94% to 100% | > 0.72 | 10.01 | 4 11% to 22.40% | 100 | 94 94% to 100% | | | | |
| > 0.705 7.271 3.01676 to 17.52% 100 94.94% to 100% > 0.785 7.273 2.017% to 17.59% 100 94.94% to 100% > 0.805 5.455 1.139% to 15.12% 100 94.94% to 100% > 0.88 1.818 0.040% to 9719% 100 94.94% to 100% | > 0.75 | 0.001 | 3.018% to 10.05% | 100 | 94.94/0 10 100/0 94.94% to 100% | | | | |
| $> 0.805 \qquad 5.455 \qquad 1.139\% \text{ to } 15.12\% \qquad 100 \qquad 94.94\% \text{ to } 100\%$ $> 0.88 \qquad 1.818 \qquad 0.04602\% \text{ to } 9.719\% \qquad 100 \qquad 94.94\% \text{ to } 100\%$ | > 0.785 | 7.071 | 2 017% to 17 50% | 100 | 94.94/0 10 100/0 94.94% to 100% | | | | |
| > 0.88 1.818 0.04602% to 9.710% 100 0.4.04.04.00% | > 0.765 | 5 155 | 1 130% to 15 120% | 100 | 94.94/0 10 100/0 94.94% to 100% | | | | |
| | > 0.805 | 1 818 | 0.04602% to 0.710% | 100 | 94 94% to 100% | | | | |

Supplementary Table S3. Sensitivity and specificity of A2G1(6)FB in HCC.





(A) Chromatogram of anion-exchange chromatography showing the separation of *N*-glycans according to the number of sialic acid residues. S0, S1, S2 and S3 indicate the elution positions of neutral, monosialo, disialo and trisialo PA-oligosaccharides, respectively. (B) Levels of sialylated *N*-glycans in sera prepared at 0.5 h, 3 h, 6 h, 9 h, and 24 h after blood collection. No changes in the level of sialylated *N*-glycans were observed. Error bars represent standard deviation (SD). (C) Chromatogram of NP-HPLC after neuraminidase treatment. *N*-glycan elution profiles were stable 24 h after blood collection.



Supplementary Figure S2. NP-HPLC chromatogram of neutral and neutral + asialo N-glycans.

Distinct changes of neutral *N*-glycans in HCC and LC patients compared with those in healthy controls. Arrowheads and arrows indicate neutral *N*-glycans and neutral + asialo *N*-glycans respectively. *HCC: a patient with hepatocellular carcinoma, LC: a patient with liver cirrhosis, Healthy: healthy control.*



Supplementary Figure S3. Correlation between age and A2G1(6)FB expression in HCV-infected HCC patients. There was no significant correlation between age and A2G1(6)FB expression (r = -0.2635, P = 0.0878) (Pearson's r).



Supplementary Figure S4. A2G1(6)FB expression levels and Child-Pugh classification.

A2G1(6)FB expression levels were examined in groups classified by the Child-Pugh score (Non (n=71) vs A (n=17); P<0.0001, Non (n=71) vs B (n=15); P<0.0001, Non (n=71) vs C (n=5); P<0.0001, A (n=17) vs B (n=15); P=0.0316, A (n=17) vs C (n=5); P=0.0005) (one-way ANOVA). *Non: non-classified samples*.



Supplementary Figure S5. A2G1(6)FB expression level is not correlated with AFP or PIVKA-II. (A–H) Correlations in each stage of hepatocellular carcinoma between A2G1(6)FB and AFP or PIVKA-II. There were no correlations in all stages of HCC. *AFP: α-fetoprotein, PIVKA-II: protein induced by vitamin K absence or antagonists-II.*