Mark R. Holland, Ph.D.

Publication List

(January 2016)

Refereed Journal Articles

1. Milne, M.L., Singh, G.K., Miller, J.G., Wallace, K.D., and **Holland, M.R.**, Toward 3-D Echocardiographic Determination of Regional Myofiber Structure. Ultrasound Med Biol, 42(2): p. 607-618; (2016) #4711925.
2. Sanchez, A.A., Levy, P.T., Sekarski, T.J., Hamvas, A., **Holland, M.R.**, and Singh, G.K., Effects of Frame Rate on Two-Dimensional Speckle Tracking-Derived Measurements of Myocardial Deformation in Premature Infants. Echocardiography, 32(5): p. 839-847; (2015) #4324397.
3. Sanchez, A.A., Levy, P.T., Sekarski, T.J., Arbelaez, A.M., Hildebolt, C.F., **Holland, M.R.**, and Singh, G.K., Markers of Cardiovascular Risk, Insulin Resistance, and Ventricular Dysfunction and Remodeling in Obese Adolescents. J Pediatr, 166(3): p. 660-665; (2015) #4344883.
4. Rasalingam, R., **Holland, M.R.**, Cooper, D.H., Novak, E., Rich, M.W., Miller, J.G., and Perez, J.E., Patients with Diabetes and Significant Epicardial Coronary Artery Disease Have Increased Systolic Left Ventricular Apical Rotation and Rotation Rate at Rest. Echocardiography; (2015)
5. Levy, P.T., Machefsky, A., Sanchez, A.A., Patel, M.D., Rogal, S., Fowler, S., Yaeger, L., Hardi, A., **Holland, M.R.**, Hamvas, A., and Singh, G.K., Reference Ranges of Left Ventricular Strain Measures by Two-Dimensional Speckle-Tracking Echocardiography in Children: A Systematic Review and Meta-Analysis. J Am Soc Echocardiogr; (2015)
6. Levy, P.T., Dioneda, B., **Holland, M.R.**, Sekarski, T.J., Lee, C.K., Mathur, A., Cade, W.T., Cahill, A.G., Hamvas, A., and Singh, G.K., Right Ventricular Function in Preterm and Term Neonates: Reference Values for Right Ventricle Areas and Fractional Area of Change. J Am Soc Echocardiogr, 28(5): p. 559-569; (2015) #4532398.
7. Groopman, A.M., Katz, J.I., **Holland, M.R.**, Fujita, F., Matsukawa, M., Mizuno, K., Wear, K.A., and Miller, J.G., Conventional, Bayesian, and Modified Prony's Methods for Characterizing Fast and Slow Waves in Equine Cancellous Bone. J Acoust Soc Am, 138(2): p. 594-604; (2015) #4529434.
8. Cade, W.T., Singh, G.K., **Holland, M.R.**, Reeds, D.N., Overton, E.T., Cibulka, N., Bahow, K., Presti, R., Stephens, A., and Cahill, A.G., Maternal Post-Absorptive Leucine Kinetics During Late Pregnancy in Us Women with Hiv Taking Antiretroviral Therapy: A Cross-Sectional Pilot Study. Clin Nutr ESPEN, 10(4): p. e140-e146; (2015) #4528644.
9. Levy, P.T., Sanchez Mejia, A.A., Machefsky, A., Fowler, S., **Holland, M.R.**, and Singh, G.K., Normal Ranges of Right Ventricular Systolic and Diastolic Strain Measures in Children: A Systematic Review and Meta-Analysis. J Am Soc Echocardiogr, 27(5): p. 549-560, e543; (2014) #4031687.
10. Groh, G.K., Levy, P.T., **Holland, M.R.**, Murphy, J.J., Sekarski, T.J., Myers, C.L., Hartman, D.P., Roiger, R.D., and Singh, G.K., Doppler Echocardiography Inaccurately Estimates Right Ventricular Pressure in Children with Elevated Right Heart Pressure. J Am Soc Echocardiogr, 27(2): p. 163-171; (2014) #3946813.
11. Giglio, V., Puddu, P.E., **Holland, M.R.**, Camastra, G., Ansalone, G., Ricci, E., Mela, J., Sciarra, F., and Di Gennaro, M., Ultrasound Tissue Characterization Does Not Differentiate Genotype, but Indexes Ejection Fraction Deterioration in Becker Muscular Dystrophy. Ultrasound Med Biol, 40(12): p. 2777-2785; (2014)

12. Levy, P.T., **Holland, M.R.**, Sekarski, T.J., Hamvas, A., and Singh, G.K., Feasibility and Reproducibility of Systolic Right Ventricular Strain Measurement by Speckle-Tracking Echocardiography in Premature Infants. J Am Soc Echocardiogr, 26(10): p. 1201-1213; (2013)
13. Singh, G.K., Vitola, B.E., **Holland, M.R.**, Sekarski, T., Patterson, B.W., Magkos, F., and Klein, S., Alterations in Ventricular Structure and Function in Obese Adolescents with Nonalcoholic Fatty Liver Disease. J Pediatr 162: p. 1160-1168; (2013)
14. Johnson, B.L., **Holland, M.R.**, Miller, J.G., and Katz, J.I., Ultrasonic Attenuation and Speed of Sound of Cornstarch Suspensions. J Acous Soc Am, 133(3): p. 1399–1403; (2013)
15. Zaidman, C.M., **Holland, M.R.**, Noetzel, M.J., Park, T.S., and Pestronk, A., Newborn Brachial Plexus Palsy: Evaluation of Severity Using Quantitative Ultrasound of Muscle. Muscle & Nerve, 47(2): p. 246–254; (2013)
16. Hoffman, J.J., Nelson, A.M., **Holland, M.R.**, and Miller, J.G., Cancellous Bone Fast and Slow Waves Obtained with Bayesian Probability Theory Correlate with Porosity from Computed Tomography. J Acous Soc Am, 132(3): p. 1830–1837; (2012)
17. Milne, M.L., Singh, G.K., Miller, J.G., and **Holland, M.R.**, Echocardiographic-Based Assessment of Myocardial Fiber Structure in Individual, Excised Hearts. Ultrasonic Imaging, 34(3): p. 129-141; (2012)
18. Zaidman, C.M., **Holland, M.R.**, and Hughes, M.S., Quantitative Ultrasound of Skeletal Muscle: Reliable Measurements of Calibrated Muscle Backscatter from Different Ultrasound Systems. Ultrasound Med & Biol, 38(9): p. 1618-1162; (2012)
19. Nelson, A.M., Hoffman, J.J., Anderson, C.C., **Holland, M.R.**, Nagatani, Y., Mizuno, K., Matsukawa, M., and Miller, J.G., Determining Attenuation Properties of Interfering Fast and Slow Ultrasonic Waves in Cancellous Bone. J Acous Soc Am, 130(4): p. 2233-2240; (2011)
20. Lloyd, C.W., Shmuylovich, L., **Holland, M.R.**, Miller, J.G., and Kovacs, S.J., The Diastolic Function to Cyclic Variation of Myocardial Ultrasonic Backscatter Relation: The Influence of Parametrized Diastolic Filling (Pdf) Formalism Determined Chamber Properties. Ultrasound Med & Biol, 37(8): p. 1185-1195; (2011)
21. Hoffman, J.J., Johnson, B.L., **Holland, M.R.**, Fedewa, R.J., Nair, A., and Miller, J.G., Layer-Dependent Variation in the Anisotropy of Apparent Integrated Backscatter from Human Coronary Arteries. Ultrasound Med & Biol, 37(4): p. 632-641; (2011)
22. Anderson, C.C., Gibson, A.A., Schaffer, J.E., Peterson, L.R., **Holland, M.R.**, and Miller, J.G., Bayesian Parameter Estimation for Characterizing the Cyclic Variation of Echocardiographic Backscatter to Assess the Hearts of Asymptomatic Type 2 Diabetes Mellitus Subjects. Ultrasound Med & Biol, 37(5): p. 805-812; (2011)
23. Lloyd, C.W., **Holland, M.R.**, and Miller, J.G., Improving the Reproducibility of the Cyclic Variation of Myocardial Backscatter. Ultrasonic Imaging, 32,: p. 243-254; (2010)
24. Anderson, C.C., Bauer, A.Q., **Holland, M.R.**, Pakula, M., Laugier, P., Bretthorst, G.L., and Miller, J.G., Inverse Problems in Cancellous Bone: Estimation of the Ultrasonic Properties of Fast and Slow Waves Using Bayesian Probability Theory. J Acous Soc Am 128: p. 2940-2948; (2010)
25. **Holland, M.R.**, Gibson, A.A., Bauer, A.Q., Peterson, L.R., Schaffer, J.E., Bach, R.G., Cresci, S., and Miller, J.G., Echocardiographic Tissue Characterization Demonstrates Differences in the Left and Right Sides of the Ventricular Septum. Ultrasound Med & Biol, 36(10): p. 1653-1661; (2010)

26. Singh, G.K., Cupps, B., Pasque, M., Woodard, P.K., **Holland, M.R.**, and Ludomirsky, A., Accuracy and Reproducibility of Strain by Speckle Tracking in Pediatric Subjects with Normal Heart and Single Ventricular Physiology: A 2d Speckle Tracking Echocardiography and Magnetic Resonance Imaging Correlative Study. J Am Soc Echocardiogr, 23(11): p. 1143-1152; (2010)
27. Gibson, A.A., Schaffer, J.E., Peterson, L.R., Bilhorn, K.R., Robert, K.M., Haider, T.A., Farmer, M.S., **Holland, M.R.**, and Miller, J.G., Quantitative Analysis of the Magnitude and Time Delay of Cyclic Variation of Myocardial Backscatter from Asymptomatic Type 2 Diabetes Mellitus Subjects. Ultrasound Med & Biol, 35(9): p. 1458–1467; (2009)
28. **Holland, M.R.**, Gibson, A.A., Kirschner, C.A., Hicks, D., Ludomirsky, A., and Singh, G.K., Intrinsic Myoarchitectural Differences between the Left and Right Ventricles of Fetal Human Hearts: An Ultrasonic Backscatter Feasibility Study. J Am Soc Echocardiogr, 22(2): p. 170-176; (2009)
29. Bauer, A.Q., Anderson, C.C., **Holland, M.R.**, and Miller, J.G., Bone Sonometry: Reducing Phase Aberration to Improve Estimates of Broadband Ultrasonic Attenuation (Bua). J Acoust Soc Am, 125(1): p. 522–529; (2009)
30. Gibson, A.A., Singh, G.K., Hoffman, J.J., Ludomirsky, A., and **Holland, M.R.**, Measurements of Ultrasonic Attenuation Properties of Mid-Gestational Fetal Pig Hearts. Ultrasound Med Biol, 35(2): p. 319-328; (2009)
31. Anderson, C.C., Marutyan, K.R., Wear, K.A., **Holland, M.R.**, Miller, J.G., and Bretthorst, G.L., Interference between Wave Modes May Contribute to the Apparent Negative Dispersion Observed in Cancellous Bone. J Acoust Soc Am, 124(3): p. 1781-1789; (2008)
32. Zaidman, C.M., **Holland, M.R.**, Anderson, C.C., and Pestronk, A., Calibrated Quantitative Ultrasound Imaging of Skeletal Muscle Using Backscatter Analysis. Muscle & Nerve, 38: p. 893–898; (2008)
33. Bauer, A.Q., Marutyan, K.R., **Holland, M.R.**, and Miller, J.G., Negative Dispersion in Bone: The Role of Interference in Measurements of the Apparent Phase Velocity of Two Temporally Overlapping Signals. J Acoust Soc Am, 123(4): p. 2407-2414; (2008)
34. Gibson, A.A., Singh, G.K., Kulikowska, A., Wallace, K.D., Hoffman, J.J., Ludomirsky, A., and **Holland, M.R.**, Regional Variation in the Measured Apparent Ultrasonic Backscatter of Mid-Gestational Fetal Pig Hearts. Ultrasound Med Biol, 33(12): p. 1955-1962; (2007)
35. Lloyd, C.W., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., A Plane Wave Source with Minimal Harmonic Distortion for Measuring Nonlinear Acoustic Properties. J Acoust Soc Am, 122(1): p. 91-96; (2007)
36. Yang, M., Krueger, T.M., Miller, J.G., and **Holland, M.R.**, Characterization of Anisotropic Myocardial Backscatter Using Spectral Slope, Intercept, and Midband Fit Parameters. Ultrasonic Imaging, 29(122-134); (2007)
37. Yang, M., Krueger, T.M., **Holland, M.R.**, and Miller, J.G., Anisotropy of the Backscatter Coefficient of Formalin-Fixed Ovine Myocardium. J Acoust Soc Am, 122(1): p. 581-586; (2007)
38. Bauer, A.Q., Marutyan, K.R., **Holland, M.R.**, and Miller, J.G., Is the Kramers-Kronig Relationship between Ultrasonic Attenuation and Dispersion Maintained in the Presence of Apparent Losses Due to Phase Cancellation? J Acoust Soc Am, 122(1): p. 222-228; (2007)
39. Baldwin, S.L., Yang, M., Marutyan, K.R., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Ultrasonic Detection of the Anisotropy of Protein Cross Linking in Myocardium at Diagnostic Frequencies. IEEE Trans Ultrason Ferroel Freq Contr 54(7): p. 1360-1369; (2007)

40. Wallace, K.D., Lloyd, C.W., **Holland, M.R.**, and Miller, J.G., Finite Amplitude Measurements of the Nonlinear Parameter B/a for Liquid Mixtures Spanning a Range Relevant to Tissue Harmonic Mode. Ultrasound Med Biol, 33(4): p. 620-629; (2007)
41. Marutyan, K.R., **Holland, M.R.**, and Miller, J.G., Anomalous Negative Dispersion in Bone Can Result from the Interference of Fast and Slow Waves. J Acoust Soc Am, 120(5 Pt 1): p. EL55-61; (2006)
42. **Holland, M.R.**, Gibson, A.A., Peterson, L.R., Areces, M., Schaffer, J.E., Perez, J.E., and Miller, J.G., Measurements of the Cyclic Variation of Myocardial Backscatter from Two-Dimensional Echocardiographic Images as an Approach for Characterizing Diabetic Cardiomyopathy. J CardioMetabolic Syndrome, 1(2): p. 149-152; (2006)
43. Wallace, K.D., **Holland, M.R.**, Robinson, B.S., Fedewa, R.J., Lloyd, C.W., and Miller, J.G., Impact of Propagation through an Aberrating Medium on the Linear Effective Apodization of a Nonlinearly Generated Second Harmonic Field. IEEE Trans Ultrason Ferroel Freq Contr, 53(7): p. 1260-1268; (2006)
44. Yang, M., Baldwin, S.L., Marutyan, K.R., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Elastic Stiffness Coefficients (C11, C33, and C13) for Freshly Excised and Formalin-Fixed Myocardium from Ultrasonic Velocity Measurements. J Acoust Soc Am, 119(3): p. 1880-1887; (2006)
45. Baldwin, S.L., Marutyan, K.R., Yang, M., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Measurements of the Anisotropy of Ultrasonic Attenuation in Freshly Excised Myocardium. J Acoust Soc Am, 119(5 Pt 1): p. 3130-3139; (2006)
46. Marutyan, K.R., Yang, M., Baldwin, S.L., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., The Frequency Dependence of Ultrasonic Velocity and the Anisotropy of Dispersion in Both Freshly Excised and Formalin-Fixed Myocardium. Ultrasound Med Biol, 32(4): p. 603-610; (2006)
47. **Holland, M.R.**, Kovacs, A., Posdamer, S.H., Wallace, K.D., and Miller, J.G., Anisotropy of Apparent Backscatter in the Short-Axis View of Mouse Hearts. Ultrasound Med Biol, 31(12): p. 1623–1629; (2005)
48. Baldwin, S.L., Yang, M., Marutyan, K.R., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Measurements of the Anisotropy of Ultrasonic Velocity in Freshly Excised and Formalin-Fixed Myocardial Tissue. J Acoust Soc Am, 118(1): p. 505-513; (2005)
49. Fedewa, R.J., Wallace, K.D., **Holland, M.R.**, Jago, J.R., Ng, G.C., Robinson, B.S., Rielly, M.R., and Miller, J.G., On the Stability of the Effective Apodization of the Nonlinearly Generated Second Harmonic with Respect to Range. J Acoust Soc Am, 117(4): p. 1858-1867; (2005)
50. Baldwin, S.L., Marutyan, K.R., Yang, M., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Estimating Myocardial Attenuation from M-Mode Ultrasonic Backscatter. Ultrasound Med Biol, 31(4): p. 477-484; (2005)
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52. **Holland, M.R.**, Wallace, K.D., and Miller, J.G., Potential Relationships among Myocardial Stiffness, the Measured Level of Myocardial Backscatter (“Image Brightness”) and the Magnitude of the Systematic Variation of Backscatter (Cyclic Variation) over the Heart Cycle. J Am Soc of Echocardiogr, 17(11): p. 1131-1137; (2004)
53. Baldwin, S.L., Yang, M., Marutyan, K.R., Wallace, K.D., **Holland, M.R.**, and Miller, J.G., Influence of Bright Intramural Echoes on Estimates of Ultrasonic Attenuation from

Backscattered Ultrasound in Excised Myocardium. Ultrasonic Imaging, 26: p. 233-249; (2004)

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55. Fedewa, R.J., Wallace, K.D., **Holland, M.R.**, Jago, J.R., Ng, G.C., Rielly, M.R., Robinson, B.S., and Miller, J.G., Spatial Coherence of Backscatter for the Nonlinearly Produced Second Harmonic for Specific Transmit Apodizations. IEEE Trans. Ultrason Ferroel Freq Contr, 51(5): p. 576-588; (2004)
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62. Finch-Johnston, A.E., Gussak, H.M., Mobley, J., **Holland, M.R.**, Petrovic, O., Pérez, J.E., and Miller, J.G., Dependence of “Apparent” Magnitude on the Time Delay of Cyclic Variation of Myocardial Backscatter. Ultrasound in Medicine and Biology, 25(5): p. 759-762; (1999)
63. **Holland, M.R.**, Lewis, S.H., Hall, C.S., Finch-Johnston, A.E., Handley, S.M., Wallace, K.D., D'Sa, A.P., Prater, D.M., Perez, J.E., and Miller, J.G., Effects of Tissue Anisotropy on the Spectral Characteristics of Ultrasonic Backscatter Measured with a Clinical Imaging System. Ultrasonic Imaging, 20: p. 178-190; (1998)
64. **Holland, M.R.**, Wilkenshoff, U.M., Finch-Johnston, A.E., Handley, S.M., Perez, J.E., and Miller, J.G., Effects of Myocardial Fiber Orientation in Echocardiography: Quantitative Measurements and Computer Simulation of the Regional Dependence of Backscattered Ultrasound in the Parasternal Short-Axis View. J Am Soc of Echocardiogr, 11(10): p. 929-937; (1998)
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66. Hollman, K.W., **Holland, M.R.**, Miller, J.G., Nagy, P.B., and Rose, J.H., Effective Ultrasonic Transmission Coefficient for Randomly Rough Surfaces. J Acoust Soc Am, 100: p. 832-839; (1996)
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70. Pickens, K.S., Bolef, D.I., **Holland, M.R.**, and Sundfors, R.K., Superconducting Quantum Interference Device Detection of Acoustic Nuclear Quadrupole Resonance of Sb121 and Sb123 in Antimony Metal. Phys. Rev. B, 30: p. 3644-3648; (1984)

Book Sections and Invited Reviews

1. Singh, G.K., Levy, P.T., **Holland, M.R.**, and Hamvas, A., Novel Methods for Assessment of Right Heart Structure and Function in Pulmonary Hypertension. Clinics in Perinatology, 39(3): p. 685-701; (2012)
2. Kaul, S., Miller, J.G., Grayburn, P.A., Hashimoto, S., Hibberd, M., **Holland, M.R.**, Houle, H.C., Klein, A.L., Knoll, P., Lang, R.M., Lindner, J.R., McCulloch, M.L., Metz, S., Mor-Avi, V., Pearlman, A.S., Pellikka, P.A., Demars Plambeck, N., Prater, D., Porter, T.R., Sahn, D.J., Thomas, J.D., Thomenius, K.E., and Weissman, N.J., A Suggested Roadmap for Cardiovascular Ultrasound Research for the Future. J Am Soc Echocardiogr, 24(4): p. 455-464; (2011)
3. Anderson, C.C., Bauer, A.Q., Marutyan, K.R., **Holland, M.R.**, Pakula, M., Bretthorst, G.L., Laugier, P., and Miller, J.G., Chapter 12: Phase Velocity of Cancellous Bone: Negative Dispersion Arising from Fast and Slow Waves, Interference, Diffraction, and Phase Cancellation at Piezoelectric Receiving Elements, in Bone Quantitative Ultrasound, P. Laugier and Guillaume Haat, Editors. Springer: Dordrecht Heidelberg London New York. p. 319-330; (2011)
4. Singh, G.K. and **Holland, M.R.**, Diastolic Dysfunction in Pediatric Cardiac Patients: Evaluation and Management. Current Treatment Options in Cardiovascular Medicine, 12: p. 503–517; (2010)
5. **Holland, M.R.** and Wickline, S.A., Ultrasonic Characterization of Myocardium, in Interstitial Fibrosis in Heart Failure, F.J. Villarreal, Editor. Springer Science+Business Media, Inc: New York. p. 115-148; (2005)
6. Kofler, J.M., Kruger, R., Boote, E., Lu, Z., Fowlkes, J.B., and **Holland, M.R.**, Clinical Ultrasound Physics: Workbook for Physicists, Residents, and Students: Medical Physics Publishing. 179; (2001)
7. Tamirisa, P.K., **Holland, M.R.**, Miller, J.G., and Perez, J.E., Ultrasonic Tissue Characterization: Review of an Approach to Assess Hypertrophic Myocardium. Echocardiography, 18(7): p. 593-597; (2001)

8. **Holland, M.R.**, Perez, J.E., Wickline, S.A., Handley, S.M., Finch-Johnston, A.E., Mobley, J., Hall, C.S., Wallace, K.D., and Miller, J.G., Clinical Implementation of Ultrasonic Quantitative Nondestructive Evaluation of the Heart: A Review. Nondestructive Testing and Evaluation, 14: p. 217-235; (1998)
9. Perez, J.E., **Holland, M.R.**, Barzailai, B., Handley, S.M., Vandenberg, B.F., Miller, J.G., and Skorton, D.J., Ultrasonic Characterization of Cardiovascular Tissue, in Cardiac Imaging - a Companion to Braunwald's Heart Disease, D.J. Skorton, et al., Editors. W. B. Saunders Co. p. 606-622; (1996)

Conference Proceedings

1. Nelson, A.M., **Holland, M.R.**, Katz, J.I., and Miller, J.G. Incorporation of Explicit Transmission Coefficients in the Wave Propagation Model Enhances the Results of Bayesian Analysis of Fast and Slow Wave Propagation in Cancellous Bone. in Proc IEEE Ultrasonics Symposium. Prague, Czech Republic. 10.1109/ULTSYM.2013.0460: p. 1805 - 1808; (2013)
2. Nelson, A.M., Hoffman, J.J., **Holland, M.R.**, and Miller, J.G. Single Mode Analysis Appears to Overestimate the Attenuation of Human Calcaneal Bone Based on Bayesian-Derived Fast and Slow Wave Mode Analysis. in Proc. IEEE Ultrasonics Symposium. Dresden, Germany. 10.1109/ULTSYM.2012.0254: p. 1015-1018; (2012)
3. Milne, M.L., Singh, G.K., Miller, J.G., and **Holland, M.R.** Feasibility of Echocardiographic-Based Assessment of Myocardial Fiber Structure in Individual Hearts. in Proc. IEEE Ultrasonics Symposium. Orlando, FL. 10.1109/ULTSYM.2011.0500 p. 2009-2012; (2011)
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