LS-HHMI Outreach Summer Curriculum Project Classroom Resource Information Form			
Title	Evolution of Human Endurance Walking and Running		
Resource Type	Lesson Plan ☒ Activity ☐ Lab Activity ☐ Homework Assignment ☒ Correlations ☐ Other ☒ PowerPoint presentation		
Description	A multimedia, multi-modal introduction to an anthropological understanding of human locomotion. Activator exercises, questions, and discussion are used to engage student interest and prior knowledge. A PowerPoint presentation is used to convey ideas and evidence of the evolution of endurance running in humans, along with social implications and personal insights.		
Author(s)	Danny Fain		
Author Institution(s)	Learning Prep School, Newton, MA		
Objective	1. Identify the main leg parts involved in walking and running. 2. Identify some human characteristics that make us well-suited for endurance walking & running, in contrast to other mammals. 3. Compare/contrast the lower-body morphology of humans and chimpanzees/gorillas. 4. Describe some of the evidence supporting the hypothesis that endurance walking and running in humans was an evolutionary adaptation. 5. Explain how modern sedentary lifestyle is not well-suited to physiology of human body. 6. Identify some specific activities people can/do engage in that are better suited to physiology.		
Key Concepts	Human musculoskeletal anatomy, physiology of locomotion, evolution of locomotion, hominid fossil evidence.		
Student Prep	Introduction to taxonomy and Natural Selection theory of evolution. Introduction to theories and evidence of hominid evolution. Some understanding of vertebrate musculoskeletal tissues (muscles, bones, tendons) useful but not essential.		
Materials	Printed or digital text & pictures showing major elements of human leg anatomy (bones, muscles, tendons). PowerPoint presentation slideshow. Web browser (for links to online animations, videos …). Student journal; could be augmented by a class wiki. Optional: hand-held video camera.		
Grade Level(s)	High school students in an Introductory Biology class. Suitable for students with moderate language-based learning disabilities (dyslexia, input/output processing, etc).		
Teacher Prep Time	1 – 2 hours	**Class Time**	2 – 3 periods
National Standards	Life Science content standard C.3		
State Standards	Mass Frameworks: Life Science 4.5 , 5.1 , 5.2		
Sources	Dennis M. Bramble & Daniel E. Lieberman, "Endurance running and the evolution of *Homo*", ***Nature*** 432 **(18 November 2004)**		
References	http://www.nature.com/nature/journal/v432/n7015/fig_tab/nature03052_ft.html Mary-Elizabeth Patti, "Molecular Pathways to Type 2 Diabetes Risk in Humans" (PowerPoint presentation)		

Assessment	Homework assignment (comprehension/reflection questions) Participation in discussions