Abstract 44

CHARACTERIZATION OF 26 NEW MINISTR LOCI

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A total of 26 novel mini-short tandem repeat (miniSTR) loci have been developed and characterized to aid in the analysis of degraded DNA samples. These new markers produce short PCR products in the target range of 50 – 150 base pairs (bp) by moving the primer sequences as close as possible, if not directly next to the identified repeat region [1]. More than 900 candidate loci were initially screened to determine optimal miniSTR markers based on the following criteria: small amplicon sizes (<125 bp), narrow allele spreads (<24bp), observed heterozygosities (>0.70), and locations on chromosomes unoccupied by the 13 CODIS STR loci, or at least 50 Mb away from them on the same chromosome [2]. The miniSTR loci selected included D1GATA113E02, D1S1627, D1S1677, D2S441, D2S1776, D3S3053, D3S4529, D4S2364, D4S2408, D5S2500, D6S474, D6S1017, D8S1115, D9S1122, D9S2157, D10S1248, D10S1435, D11S4463, D12ATA63A05, D14S1434, D17S974, D17S1301, D18S853, D20S482, D20S1082, and D22S1045. All of these markers were sequenced and evaluated across more than 600 samples, and their population statistics were determined [3]. The heterozygosities of the new loci were compared to those of the 13 CODIS loci and all were found to be comparable. Only seven of the new loci had lower heterozygosity values than the CODIS loci; however, all of these were much smaller in size [3]. This data suggests that these additional 26 miniSTR loci will serve as useful complements to the CODIS loci to aid in the forensic analysis of degraded DNA. In addition, these new loci will be valuable in a variety of scenarios, particularly for paternity cases, missing persons work, or mass fatality DNA identification testing involving kinship samples [2]. In fact, three of these new markers (D10S1248, D2S441, and D22S1045) from the initial six miniSTR loci previously described [2] have recently been recommended for adoption by the European DNA community as new core loci for forensic testing [4,5].

Copy of poster available:
http://www.cstl.nist.gov/biotech/strbase/pub_pres/Promega2006_Hill.pdf

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