〔最新情報："玉手箱"〕最新アリル情報

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はじめに

「Nomenclature for factors of the HLA system, 2002」がEuropean Jounal of Immunogentics, Human ImmunologyとTissue Antigens誌に掲載されるが，この中に命名法のルール変更が記載されている。会員の方においても重要な情報となると思われるので，その内容を翻訳し，掲載するすることにした。原文は，HLA Informatics Groupのホームページ(http://www.anthonynolan.org.uk/HIG/lists/new_nomenclature.html) を参照して頂きたい。また，その英文を翻訳して掲載したが，意訳せずに原文をなるべく忠実に訳している。そのため，多少意味が分かりづらいかもしれないが，意図は理解できるものと思う。

また，今回は，MICA遺伝子のアリルについての最新シーケンス情報を図に掲載する。

HLAアリル名の拡大

(Nomenclature for factors of the HLA system, 2002から引用)

HLA遺伝子がコードするタンパク質の異なるアリルを識別するために4桁コードを使用する規則が，1987の命名法報告において最初に施行された。1990年に，5桁目が，エクソン内の同義（非符号化）置換だけが異なっているシーケンスを区別できるようにするために追加された。これらの規則が採用されたとき，この命名法システムはすべてのシーケンスされたHLAアリルを収容できるであろうと予想された。残念なことに，それは特定遺伝子のアリル数が現在の命名規則で可能な最大値に急速に接近しているように，そのケースになるということは分かっていなかった。

特に，3つの問題領域がある；第一に，同義置換のために使用される5桁目は，9種類のアリルだけを識別することができる。すでに，A*0201には6種類の命名されたアリルが存在する：A*02011からA*02016である。そして，G*0101には8種類のアリルが存在する：G*01011からG*01018である。第二の問題領域は，一桁目と二桁目によって定義されるアリル・ファミリー内で，最高99のバリアントを識別するために使用される3桁目と4桁目にある。99種類のアリルを上回る最初のアリル・ファミリーは，すでに73種類のバリアントが現在までに命名されているB*15ファミリーである。そして，すでに50種類のバリアントが命名されているA*02とDRB1*13ファミリーが続く。最も差し迫った問題は，DP遺伝子にある。最初の2桁（99種類のアリルを収容できるだけのシステム）の異なる組み合わせで，非同義（符号化）置換によって異なる全てのアリルを命名するために1989年に決定された。最も最近割り当てられた名前はDPB1*9201であった。そのため，あと8種類のコーディングシーケンスが報告されたら，新しく発見されたDPB1アリルを命名するための能力がこのシステムに残されていない。

この話題については多くの議論があった。コロンあるいはセミコロンによって切り離された慎重なフィールドでアリル名の分裂を含め，異なるいくつかの選択が考慮された。利用可能な名前の数を制限しない一方，このオプションは，手近に問題の解決があまりにも根本的そして破壊的になると委員会によって最終的に見なされた。既存のデータベース構造の変化を制限するために，アリルの既存フォーマットに対して最小の変化で解決を追求するように決定された。

以下の決定は，3つの重大な問題を解決することに労を惜しまなかった。

a. 各アリルの最高99種類の同義置換を与えている現在の4桁目と5桁目との間に特別な桁を一桁導入する。これは，完全なアリル名を8桁に拡大する。その内訳は，アリル・ファミリーを定義している最初の桁（それは血清学的ファミリーに一致している），コード領域の変異を記述している3桁目と4桁目，同義置換を記述している5桁目と6桁目，そしてイントロンの変異あるいは5'または3'領域での変異を記述している7桁目と8桁目である。

b. 変異型をコードする総数が99を越えるケースには，最初のものを延長するために第二の系列が使用されることになる。例えば，B*15アリル・ファミリーについては，B*95系列が使用され，新しく追加されたB*15アリルのために利用される。従って，B*1599の次に付けられるB*15アリルは，B*9501になる。同様に，A*92系列は，A*02アリル・ファミリーの第二の系列として利用される。

c. HLA-DPB1アリルについては，既存のシステム内で新しいアリルを割り当てることに決められた。それゆえに，DPB1*9901が割り当てられた後は，DPB1*0102，DPB1*0203そしてDPB1*0302などと続く。

同義置換のための付加的な桁の導入は直ちに実施されることになる。そして，表に示すように，現在の5桁目以降が命名されている全てのアリル名は命名がを変えられることになる。新しいアリル・シーケンスの提出によって命令された時，他の変化は必要に応じて施行されることになる。

表　HLAアリルの命名法

命　　名	指　　示
HLA	HLA領域とHLA遺伝子に対する接頭辞
HLA-DRB1	特定のHLA遺伝子座（すなわちDRB1）
HLA-DRB1*13	DR13抗原をコードするアリル・ファミリー
HLA-DRB1*1301	特定のHLA アリル
HLA-DRB1*1301N	ヌルアリル
HLA-DRB1*130102	同義置換で相違するアリル
HLA-DRB1*13010102	コード領域外に変異をもつアリル
HLA-DRB1*13010102N	コード領域外に変異をもつヌルアリル

図 MICA遺伝子のシーケンス

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            Exon1                                                                                                  Exon1  |Exon2
            -23     -21                                                     -11                                       -1  |1
MICA*001    ATG GGG CTG GGC CCG GTC TTC CTG CTT CTG GCT GGC ATC TTC CCT TTT GCA CCT CCG GGA GCT GCT GCT GAG CCC
MICA*00201  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00202  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*004    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*005    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*006    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00701  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00702  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00801  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00802  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00803  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00901  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*00902  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*010    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*011    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*01201  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*01202  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*013    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*014    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*015    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*016    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*017    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*018    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*019    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*020    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*021    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
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MICA*024    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*025    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*026    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*027    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*028    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*029    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*030    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*031    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*032    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
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MICA*034    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*035    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*036    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*037    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*038    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
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MICA*040    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*041    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*042    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*043    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*044    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
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MICA*046    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*047    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*048    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
MICA*049    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *__ ___
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MICA*001	CAC	AGT	CTT	CGT	TAT	AAC	CTC	ACG	GTG	CTG	TCC	TGG	GAT	GGA	TCT	GTG	CAG	TCA	GGG	TTT	CTC	ACT	GAG	GTA	CAT
MICA*00201	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*00202	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*004	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*005	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*006	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*00701	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*00702	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*00801	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*00802	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*00803	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*00901	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*00902	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*010	---	---	---	-C-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*011	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*01201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*01202	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*013	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*014	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*015	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*017	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*020	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*022	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*023	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*024	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*025	---	---	---	-C-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*026	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*027	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*028	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*029	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*030	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*031	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*032	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*033	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*034	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*035	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*036	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*037	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*038	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*039	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*040	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*041	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	-G-	---
MICA*042	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*043	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*044	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*045	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*046	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	---	---
MICA*047	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	---	---	---	---	---	---	G--	---	-G-	---
MICA*048	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---
MICA*049	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	G--	---	---	---

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MICA*001	CTG	GAT	GGT	CAG	CCC	TTC	CTG	CGC	TGT	GAC	AGG	CAG	AAA	TGC	AGG	GCA	AAG	CCC	CAG	GGA	CAG	TGG	GCA	GAA	GAT
MICA*00201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00202	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*004	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*005	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*006	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00701	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00702	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00801	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00802	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00803	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00901	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*00902	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*010	---	---	---	---	---	---	---	---	-A-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*011	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*00201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*031	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*00201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*042	---	---	--C	A--	---	---	---	C--	---	---	-T-	---	-C-	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*046	---	---	---	---	---	-G-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*001	CAG	CAG	TGG	GGG	GAT	GTC	CTG	CCT	GAT	GGG	AAT	GGA	ACC	TAC	CAG	ACC	TGG	GTG	GCC	ACC	AGG	ATT	TGC	CAA	GGA
MICA*00201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*00803	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-G-	---
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MICA*031	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*032	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*034	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*036	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MICA*037	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-G-	---
MICA*038	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*047	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*00201	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*00803	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-**	***	***
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MICA*028	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MICA*030	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	G--	---	---	---	-**	***	***
MICA*031	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-**	***	***
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MICA*00201  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00202  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*004    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*005    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*006    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*00701  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00702  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00801  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*00802  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00803  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00901  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*00902  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*010    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*011    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*01201  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*01202  *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*013    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*014    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*015    --- --* *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*016    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*017    --- --* *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*018    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*019    --- --- --- --- --- --- --- --- --- --- --- --- --- --- -T* *** *** *** *** *** *** *** *** *** ***
MICA*020    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*021    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*022    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*023    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*024    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*025    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*026    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*027    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*028    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*029    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*030    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*031    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*032    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*033    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*034    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*036    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*037    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*038    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*041    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*042    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*043    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*045    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*046    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*047    *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*048    --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*049    --- --- --- --- --- --- --- --- --- --- --- --- -T- --- --- --- --- --- --- --- --- --- --- --- ---
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                                          360                                     368
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MICA*00202   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*005     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*006     --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- ---
MICA*00701   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00702   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00801   --- --- --- --- -C- --- --- --- --- --- --- --- --- --- A-- ---
MICA*00802   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00803   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*00901   --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- ---
MICA*00902   --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- ---
MICA*010     --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- --*
MICA*011     --- --- --- --- -C- --- --- --- G-- --- --- --- --- --T --- ---
MICA*01201   --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
MICA*01202   *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*013     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*014     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*015     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*016     --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- ---
MICA*017     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*018     --- --- --- --- --- --- --- --- --- --- --- --- --- --- A-- ---
MICA*019     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*020     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*021     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*022     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*023     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*024     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*025     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*026     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*027     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*028     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*029     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*030     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*031     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*032     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*036     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*037     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*040     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*041     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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MICA*045     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*046     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*047     *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
MICA*048     --- --- --- --- -C- --- --- --- --- --- --- --- --- --- --- ---
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