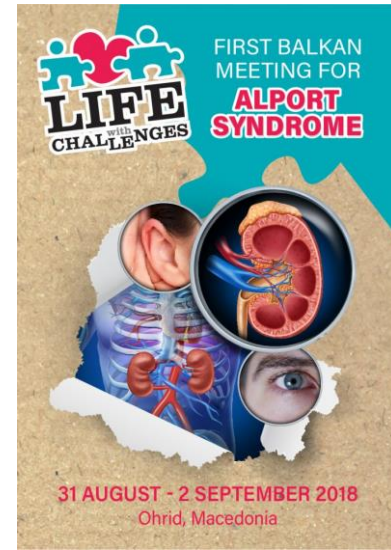


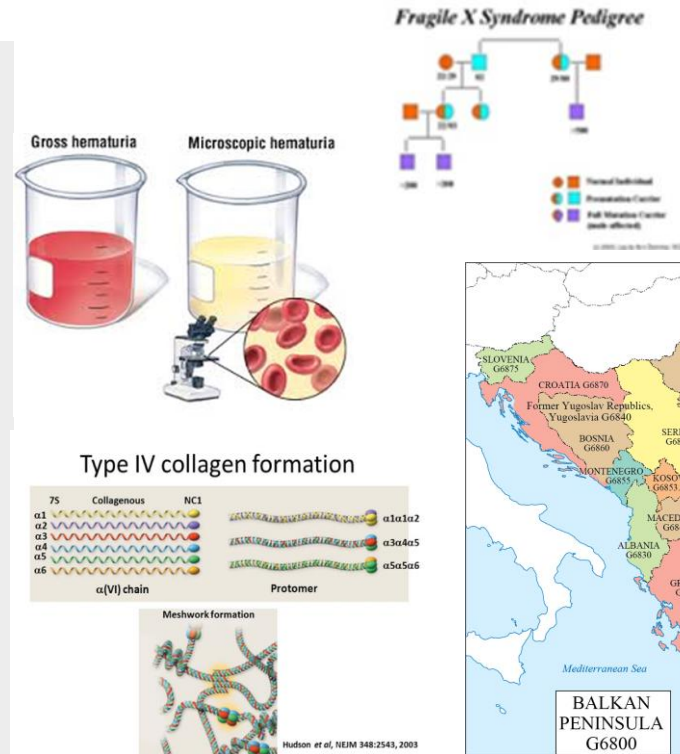
Alport Syndrome in the Balkan

Ohrid Macedonia 2018 31 august- 2 september 2018



- Family history kidney disease
- Urine test: protein and blood in urine.
- Blood test: A blood test levels of protein, and wastes in your blood.
- Ultrasound kidney
- Hearing test
- Vision test

Alport syndrome 1 in 50,000



- Kidney biopsy: looked at under a microscope.
- **Genetic test:** This can help confirm the diagnosis and determine the genetic type of Alport syndrome you may have.

Whole Exome Sequencing ?

Steroid-Resistant Nephrotic Syndrome

Galle



Nephrotic syndrome in childhood is defined by

- Proteinuria (>40 mg/m² per hour),
- hypoalbuminemia,
- edema,
- hyperlipidemia.

It can cause hypertension, severe infections, and thrombotic events.

Patients are classified by their response to steroid therapy

- In children and young adults, about 80% of patients respond to standard steroid therapy.
- Individuals with steroid-resistant nephrotic syndrome progress to CKD and ESRD.
- More than **30 monogenic genes have been identified to cause steroid-resistant nephrotic syndrome.**

Clin J Am Soc Nephrol. 2018 Jan 6; 13(1): 53–62. **Whole Exome Sequencing of Patients with Steroid-Resistant Nephrotic Syndrome** Jillian K. Warejko et al

First features

LOINC	HPO		Orpha	OMIM
13945-1 Erythrocytes in Urine sediment by high power field	HP:0000969 edema	Other symptoms	ORPHA:63 Alport Syndrome	Gene Panel Alport syndrome
2887-8 Protein [Presence] in Urine		Other symptoms	ORPHA: 656 SRNS	Gene Panel Nephrotic syndrome

OMIM Steroid resistant nephrotic syndrome (first 10)

1:# 600995. NEPHROTIC SYNDROME, TYPE 2; **NPHS2**

Cytogenetic location: 1q25.2

2:* 604766. PODOCIN; NPHS2

Cytogenetic location: 1q25.2, Genomic coordinates (GRCh38): 1:179,550,538-179,575,986

3:# 256300. NEPHROTIC SYNDROME, TYPE 1; **NPHS1**

Cytogenetic location: 19q13.12

4:* 615567. COENZYME Q8B; COQ8B

Cytogenetic location: 19q13.2, Genomic coordinates (GRCh38): 19:40,691,529-40,716,885

5:# 615244. NEPHROTIC SYNDROME, TYPE 8; NPHS8

Cytogenetic location: 17q25.3

6:# 301028. NEPHROTIC SYNDROME, TYPE 20; NPHS20

Cytogenetic location: Xq22.3

7:# 615573. NEPHROTIC SYNDROME, TYPE 9; NPHS9

Cytogenetic location: 19q13.2

8:# 610725. NEPHROTIC SYNDROME, TYPE 3; **NPHS3**

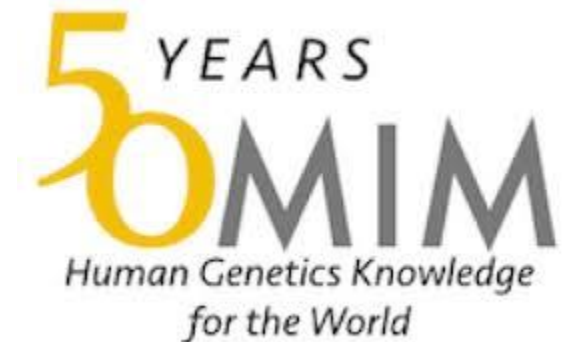
Cytogenetic location: 10q23.33

9:# 617575. NEPHROTIC SYNDROME, TYPE 14; NPHS14

10:* 601925. RHO GDP-DISSOCIATION INHIBITOR ALPHA; ARHGDI1

Cytogenetic location: 17q25.3, Genomic coordinates (GRCh38): 17:81,867,718-81,871,336

https://omim.org/search/?index=entry&sort=score+desc%2C+prefix_sort+desc&start=1&limit=10&search=steroid+resistant+nephrotic+syndrome



Familial idiopathic steroid-resistant nephrotic syndrome

https://www.orpha.net/consor/cgi-bin/OC_Exp.php?lng=en&Expert=656

ORPHA:656

Classification level: Disorder

Synonym(s):

Familial idiopathic steroid-resistant nephrotic syndrome

Genetic SRNS

Hereditary steroid-resistant nephrotic syndrome

Prevalence: Unknown

Inheritance: Autosomal dominant or Autosomal recessive

Age of onset: All ages

ICD-10: N04.1 N04.3 N04.8

OMIM: [256370](#) [600995](#) [603278](#) [603965](#) [607832](#) [610725](#) [613237](#) [614131](#) [614196](#) [615244](#) [615573](#)

[615861](#) [616002](#) [616032](#) [616220](#) [616730](#) [616892](#) [616893](#)

UMLS: C1868672

MeSH: -

GARD: [3946](#)

MedDRA: -

Renal cysts in adulthood / autosomal dominant tubulointerstitial kidney disease (ADTKD)

(NEF26v18.1; 20 genes)

ALG8, COL4A1, DNAJB11, GANAB, HNF1B, MUC1, OFD1, PKD1, PKD2, PKHD1, PRKCSH, REN, SEC61A1, SEC61B, SEC63, TMEM104, TSC1, TSC2, UMOD, VHL

Nephrotic syndrome (NPHS) / Focal segmental glomerulosclerosis (FSGS) (NEF11v18.1; 74 genes)

ACTN4, ADCK3, ADCK4, ALG1, ANLN, APOL1, ARHGAP24, ARHGDI, CD151, CD2AP, CFH, CLCN5, COL4A3, COL4A4, COL4A5, COQ2, COQ4, COQ6, COQ7, COQ9, CRB2, CUBN, DGKE, EMP2, FAT1, FN1, FOXC2, GLA, GPC5, GSN, INF2, ITGA3, ITGB4, KANK1, KANK2, KANK4, LAGE3, LAMB2, LCAT, LMNA, LMX1B, LYZ, MAFB, MAGI2, MYH9, MYO1E, NPHS1, NPHS2, NUP107, NUP205, NUP93, NXF5, OSGEP, PAX2, PDSS1, PDSS2, PLCE1, PMM2, PODXL, PTPRO, SCARB2, SEC61A1, SLC7A7, SMARCA1, SMARCA1, TP53RK, TPRKB, TRPC6, TTC21B, WDR73, WT1, XPO5, YRDC, ZMPSTE24

Chronic kidney disease of the young (CKD-Y) (includes PKD1 and PKD2) (NEF24v18.1; 141 genes)

ACE, ACTN4, ADCK4, AGT, AGTR1, AGXT, ALG1, AMN, ANKS6, APOA1, APOL1, ARHGDI, ATXN10, B2M, BBIP1, BCS1L, C3, CD151, CD2AP, CD46, CEP164, CEP290, CFB, CFH, CFHR5, CFI, CHD7, CLCN5, COL4A3, COL4A4, COL4A5, COQ2, COQ6, CRB2, CTNS, CUBN, CYP11B1, CYP11B2, DACT1, DCDC2, DGKE, DSTYK, EMP2, EYA1, FAN1, FAT1, FGA, FN1, FOXC2, FRAS1, FREM1, FREM2, GATA3, GLA, GLIS2, GRHPR, GRIP1, GSN, HNF1B, HOGA1, HPSE2, IFT27, IFT81, INF2, INVS, IQCB1, ITGA3, ITGA8, JAG1, KANK1, KANK2, KANK4, KIAA0556, KIAA0586, LAMB2, LMNA, LMX1B, LRIG2, LYZ, MAFB, MAGI2, MAP7D3, MAPKBP1, MUC1, MYH11, MYH9, MYO1E, NEK8, NOTCH2, NPHP1, NPHP3, NPHP4,

Diabetes insipidus, nephrogenic and neurogenic (NEF25v16.1; 3 genes)

AQP2, AVP, AVPR2

Copy number analysis *: AVPR2

Electrolyte disorder (including Bartter syndrome, Gitelman syndrome and hypomagnesemia)* (NEF09v18.1; 29 genes)

BSND, CACNA1S, CASR, CLCN5, CLCNKA, CLCNKB, CLDN16, CLDN19, CNNM2, DGAT1, EGF, EPCAM, FXRD2, GUCY2C, HNF1B, KCNJ1, KIF201B, KIF201C, KIF201D, KIF201E, KIF201F, KIF201G, KIF201H, KIF201I, KIF201J, KIF201K, KIF201L, KIF201M, KIF201N, KIF201O, KIF201P, KIF201Q, KIF201R, KIF201S, KIF201T, KIF201U, KIF201V, KIF201W, KIF201X, KIF201Y, KIF201Z, KIF201AA, KIF201AB, KIF201AC, KIF201AD, KIF201AE, KIF201AF, KIF201AG, KIF201AH, KIF201AI, KIF201AJ, KIF201AK, KIF201AL, KIF201AM, KIF201AN, KIF201AO, KIF201AP, KIF201AQ, KIF201AR, KIF201AS, KIF201AT, KIF201AU, KIF201AV, KIF201AW, KIF201AX, KIF201AY, KIF201AZ, KIF201BA, KIF201BB, KIF201BC, KIF201BD, KIF201BE, KIF201BF, KIF201BG, KIF201BH, KIF201BI, KIF201BJ, KIF201BK, KIF201BL, KIF201BM, KIF201BN, KIF201BO, KIF201BP, KIF201BQ, KIF201BR, KIF201BS, KIF201BT, KIF201BU, KIF201BV, KIF201BW, KIF201BX, KIF201BY, KIF201BZ, KIF201CA, KIF201CB, KIF201CC, KIF201CD, KIF201CE, KIF201CF, KIF201CG, KIF201CH, KIF201CI, KIF201CJ, KIF201CK, KIF201CL, KIF201CM, KIF201CN, KIF201CO, KIF201CP, KIF201CQ, KIF201CR, KIF201CS, KIF201CT, KIF201CU, KIF201CV, KIF201CW, KIF201CX, KIF201CY, KIF201CZ, KIF201DA, KIF201DB, KIF201DC, KIF201DD, KIF201DE, KIF201DF, KIF201DG, KIF201DH, KIF201DI, KIF201DJ, KIF201DK, KIF201DL, KIF201DM, KIF201DN, KIF201DO, KIF201DP, KIF201DQ, KIF201DR, KIF201DS, KIF201DT, KIF201DU, KIF201DV, KIF201DW, KIF201DX, KIF201DY, KIF201DZ, KIF201EA, KIF201EB, KIF201EC, KIF201ED, KIF201EE, KIF201EF, KIF201EG, KIF201EH, KIF201EI, KIF201EJ, KIF201EK, KIF201EL, KIF201EM, KIF201EN, KIF201EO, KIF201EP, KIF201EQ, KIF201ER, KIF201ES, KIF201ET, KIF201EU, KIF201EV, KIF201EW, KIF201EX, KIF201EY, KIF201EZ, KIF201FA, KIF201FB, KIF201FC, KIF201FD, KIF201FE, KIF201FF, KIF201FG, KIF201FH, KIF201FI, KIF201FJ, KIF201FK, KIF201FL, KIF201FM, KIF201FN, KIF201FO, KIF201FP, KIF201FQ, KIF201FR, KIF201FS, KIF201FT, KIF201FU, KIF201FV, KIF201FW, KIF201FX, KIF201FY, KIF201FZ, KIF201GA, KIF201GB, KIF201GC, KIF201GD, KIF201GE, KIF201GF, KIF201GG, KIF201GH, KIF201GI, KIF201GJ, 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KIF201ZS, KIF201ZT, KIF201ZU, KIF201ZV, KIF201ZW, KIF201ZX, KIF201ZY, KIF201ZZ

Copy number analysis*: CLCNKB SLC12A3

Hyperuricemia / Uricosuria (NEF08v16.2; 14 genes)

ALDOB, ALMS1, ATP7B, CTNS, G6PC, GALT, HPRT1, PYGM, REN, SLC22A12, SLC2A9, SLC37A4, UMOD


Nephrocalcinosis / Nephrolithiasis* (NEF10v18.1; 53 genes)

AGXT, ALDOB, AP2S1, APRT, ATP6V0A4, ATP6V1B1, ATP7B, BSNIP1, CASR, CLCN5, CLCNKB, CLDN16, CLDN19, CTNS, CYP24A1, ENPP1, FAM20A, FGF23, G6PC, GALT, GNA11, GRHPR, HNF4A, HPRT1, KCNJ1, KL, MAGED2, OCRL, PHEX, PTH1R, SCNN1B, SLC12A1, SLC22A12, SLC2A9, SLC34A1, SLC34A3, SLC36A2, SLC3A1, SLC4A1, SLC6A19, SLC6A20, SLC7A9, SLC9A3R1, TRPM6, VIPAS39, VPS33B, XDH

Copy number analysis*: SLC3A1 SLC7A9

Patient Information	Primary Care	Diagnosis Collaborative care	Social Services
www.shwachman.nl	Growth retardation Recurrent infections (LOINC)	Guideline SDS (Orphanetcode; SNOMED, ATC e.a.)	Recurrent illness Fatigue, Short (ICF-CY; ISO 9999)

Stichting Shwachman syndroom  Support Holland

New Diagnostics 
LOINC
ICPC

Diagnosis
 Hurler syndrome
 PKU, Duchenne MD, FOP
 Shwachman Diamond Syndrome

ICD - 10
Orphanetcode
OMIM
SNOMED -CT

Sign primary care
 Heelstick screening
 Hearing screening
 Growth; Development

Guideline
 Collaborative Health
 Care



ISO 3166-1
HL7

Registry
 Data collection with
 systematically organised
 computer processable
 collection medial terms

ATC
GS1
ICF(-CY)

New Therapeutics 

ISO9999
Guideline
 Social services and
 rehabilitation