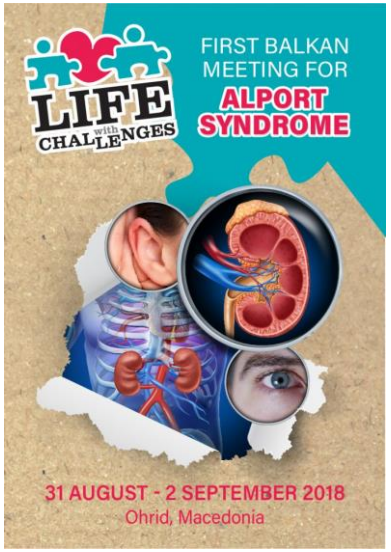
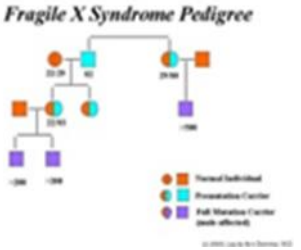
# Alport Sydrome in the Balkan

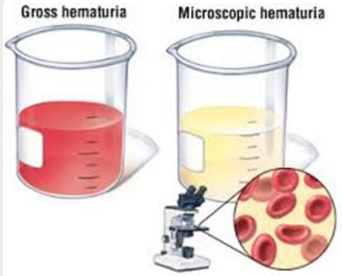
Ohrid Macedonia 2018 31 august- 2 september 2018

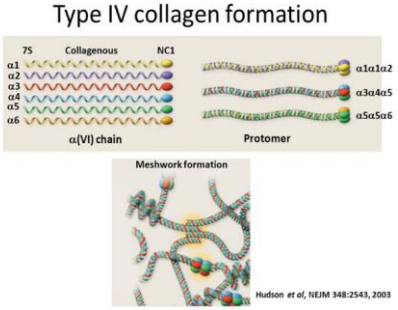



- Family history kidney disease
- Urine test: protein and blood in urine.
- Blood test: A blood test levels of protein, and wastes in your blood.
- Ultrasound kidney
- Hearing test
- Vision test

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 Syndroom** Jillian K. Warejko et al

# First features

| LOINC | HPO | | Orpha | OMIM |
|---|---|---|---|---|
| 13945-1 Erythrocytes in Urine sediment by high power field<br><br>2887-8 Protein [Presence] in Urine | HP:0000969 edema | Other symptoms | ORPHA:63 **Alport Syndrome** | Gene Panel Alport syndrome |
| | | 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; ARHGDIA
Cytogenetic location: 17q25.3, Genomic coordinates (GRCh38): 17:81,867,718-81,871,336

50 YEARS OMIM
Human Genetics Knowledge for the World

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:* -

# Form DNA Laboratory Utrecht Medical University

☐ **Renal cysts in adulthood / autosomal dominant tubulointerstitual kidney disaese (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, ARHGDIA, 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, SMARCAL1, SMARCAL1, 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, ARHGDIA, 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, Gitelm syndrome and hypomagnesemia)*** (NEF09v18.1; 29 gene

*BSND, CACNA1S, CASR, CLCN5, CLCNKA, CLCNKB, CLDN16, CL CNNM2, DGAT1, EGF, EPCAM, FXYD2, GUCY2C, HNF1B, KCNJ1, KL MAGED2, MYO5B, NEUROG3, PCBD1, SCN4A, SLC12A1, SL SLC26A3, SLC41A1, SLC9A3, SPINT2, TRPM6*

Copy number analysis*: ☐ CLCNKB ☐ SLC12A3

☐ **Hyperuricemia / Uricosuria** (NEF08v16.2; 14 genes)

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

☐ **Nephrocalcinosis / Nephrolithiasis*** (NEF10v18.1; 53 ger

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

Copy number analysis*: ☐ SLC3A1 ☐ SLC7A9

| Patient Informatiom | 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

**Diagnosis**

Hurler syndrome

PKU, Duchenne MD, FOP

Shwachman Diamond Syndrome

ICD - 10

Orphanetcode

OMIM

SNOMED -CT

New Diagnostics

LOINC

ICPC

**Sign primary care**

Heelstick screening

Hearing screening

Growth; Development

**Guideline**

Collaborative Health Care

ISO 3166-1

ATC

GS1

New Therapeutics

ICF(-CY)

ISO9999

HL7

**Registry**

Data collection with systematically organised computer processable collection medial terms

**Guideline**

Social services and rehabilitation

Galle 2019